TechDebate :: Is broadband stimulus really needed? **PAGE 18**

NETWORKWORLD

THE CONNECTED ENTERPRISE = APRIL 23, 2012

CLEAR CHOICE TEST

Next-gen firewall faceoff

SonicWall comes out on top in performance test, but trade-offs remain.

Page 30

Cisco trying to limit 'threat' of software-defined networking

BY JIM DUFFY

SAN DIEGO— Cisco's network programmability strategy is a multifaceted initiative intended to keep the business at the forefront of networking technology, even as software-defined networking threatens the company's dominance.

SDN has been hailed by proponents as the biggest transformation of networking in decades. It promises to make the physical infrastructure irrelevant to the actual behavior of the traffic by enabling software programmability of flows and additional features.

The problem for Cisco is, it makes a lot of money off the customized nature of its hardware and software, which is omnipresent in enterprise, data center and service provider networks.

But with the increasing openness of software in open-source communities and the broadening capabilities of merchant ASICs, SDNs and associated standards — like OpenFlow — are poised to further commoditize and undercut the profitability of networking hardware. So it behooves Cisco to get as close to SDN as it can, from every angle, so it can control not only the pace at which it infiltrates Cisco's ubiquity, but

► *See* **Cisco,** *page 14*

INTEROP Planning Guide

Mobility, cloud computing, security issues to dominate Interop

Page 20

Smarter technology for a Smarter Planet:

The cloud that's transforming an industry, one fish at a time.

At the University of Bari, a new computing model is creating new business models. Using an IBM SmartCloud,™ their team built a solution that allows local fishermen to auction their catch while still at sea. By creating more demand for the fishermen's product, the cloud has increased income by 25% while reducing time to market by 70%. Now the team is scaling the solution to create new business models for the winemaking and transportation industries. What can cloud do for your business? A smarter planet is built on smarter software, systems and services.

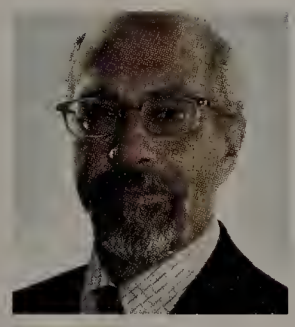
Let's build a smarter planet. ibm.com/cloudsolutions

IBM

FROM THE EDITOR | JOHN DIX

OpenFlow blossoms

Belief in OpenFlow-based software-defined networking is coalescing rapidly, the latest evidence being the overflow crowds at last week's Open Networking Summit in Santa Clara, Calif., and new details about a Cisco startup that has been formed to address the opportunity.



After having to turn people away at an overflowing Summit meeting last October, event organizers shifted last week's meeting to a venue twice as large but still maxed out registration and had to create a wait list (see "Open Networking Summit 2012: Google, Verizon, NEC, others tackle future of OpenFlow"; tinyurl.com/cup4agp).

This stuff is hot.

One of the attractions at the Summit was a keynote by Google Fellow and Senior Vice President for Technical Infrastructure Urs Hölzle, who discussed how Google has already completed the migration of its huge, international inter-data center network to OpenFlow, essentially separating network control from the data plane.

Network World blogger Art Fewell, who was at the event, said Hölzle cited a litany of benefits of using software-defined networking, including the ability to get "a global view of network utilization, allowing simple and dynamic traffic-steering on low cost hardware" (see "Google showcases OpenFlow network"; tinyurl.com/bm3wq2q).

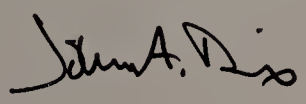
Google is one of the early backers of the Open Networking Foundation, the group that was launched in March 2011 "to standardize and promote SDN interfaces and protocols including OpenFlow." Other early backers of the work first done at Stanford and Berkeley include Microsoft, Verizon and Facebook.

A week before the Summit, Google, Cisco, Juniper and a host of other tech companies teamed with research groups at Berkeley and Stanford to create the Open Networking Research Group, another sign the industry is serious about this stuff.

The incumbent network players have to be involved, of course, because they fear that separating the network data plane from the control plane and offloading the latter to servers, as SDNs do, reduces the value of their products, so they need to keep an eye on developments.

While Cisco had been hedging its OpenFlow bets, it has since jumped in with both feet by creating Insieme. CEO John Chambers last week said Cisco has invested $100 million in the venture, with the right to purchase the remaining interests of the company for up to $750 million, a so-called spin-in.

Despite the flurry of activity around SDNs, experts remind us that it is still early days. This will be a long journey. Nevertheless, Fewell says it is never too early to start asking suppliers for their long-range OpenFlow plans.



inside

APRIL 23, 2012

peersay

The end of Windows XP support: A security nightmare...

IF MICROSOFT WOULD build properly tested code to begin with, we would not have to worry. MS develops programs "good enough" to allow them to sell, then waits for the consumers and hackers to find the problems (Re: "End of Windows XP support era signals beginning of security nightmare"; tinyurl.com/6s5s8fw).

Would you want the computers in your car to have software developed under the same philosophy, leaving you stranded?

Brunnegd

XP IS ALSO embedded in many POS registers, kiosks, ATMs and other devices. All told, there are far more XP systems out there than desktop statistics reflect. This is going to be a huge global IT community problem, and it is not in Microsoft's perceived financial interest to do anything about it except push Windows 7 upgrades.

GreenMan

...or opportunity to open source?

DON'T FORGET THAT XP shares large chunks of code with its descendants. That's why many Microsoft patches apply to multiple operating systems and products (Re: "Microsoft, instead of turning the lights off on XP, make it open source"; tinyurl.com/73zfu98).

Shared code base is actually a good thing, as this is what allows new OS versions to be backward compatible. For Microsoft to release XP to open source it would have to make any new operating systems break this compatibility, and you would suddenly not be able to run programs compiled for XP on the latest version of Windows.

You could even argue releasing XP to open source would actually be dangerous, as malware writers would get a free look at code that is a critical part of current operating systems, both consumer (Windows 7) and the various current server OSs. Yes, the open source community would eventually catch up to finding and fixing vulnerabilities, but there would be a period of mass chaos in the interim.

Alan Dudley

More tips for creating profitable mobile apps

1. CREATE AN app that people want (not another "roll a joint" app) (Re: "3 tips for actually making money making mobile apps"; tinyurl.com/74mpdns).

2. Market the app correctly; release a demo for free (you will lose all revenue due to refunds and bad ratings, whereas you can gain good feedback from a beta release).

3. Multiplatform (not everyone owns an iOS device).

4. K.I.S.S. (Keep It Simple, Stupid. If people can't use it they won't want it.)

5. Don't rely on one app to make you millions (keep a flow of revenue with several apps making lower amounts, vs. one app to hit huge. This can free up time to create an app that will be good enough to net high yield).

John C. Conn

1. CONSIDER CAREFULLY which style your app will be: Free, Freemium, or Paymium.

2. Stay away from HTML5 for now.

3. Patent early and often.

John Bickerstaff

PureFlex, UCS not comparable

SORRY, BUT THE comparison of PureFlex with UCS is off the mark. PureFlex is more akin to FlexPod and Vblock, which include all of the same technology domain components (compute + networking + storage) (Re: "Are IBM, Cisco and Oracle IT platforms really comparable?" tinyurl.com/7sz87f7).

There are **far more XP systems out there** than desktop statistics reflect.

There are two primary differences between PureFlex and FlexPod/Vblock. First is that IBM doesn't need to partner to pull the hardware components together, and second is that IBM has a far deeper bench of apps/software to add to the mix. IBM is not doing anything truly revolutionary here — it's following the lead of others who have already been delivering similar solutions, albeit adding its own twist and strengths (software, software, software).

Jim Frey

NETWORKWORLD

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The cloud most traveled

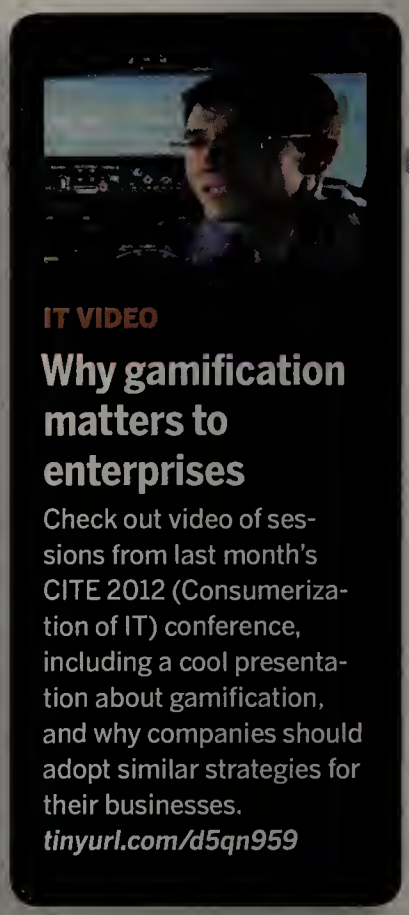
DEEPFIELD NETWORKS, A new cloud intelligence company, posted some eye-popping findings last week about the breadth of Internet activity Amazon is now responsible for. Fully one-third of all Internet users now access Amazon's cloud site at least once a day, and about 1% of all Internet consumer traffic in North America goes to the Amazon cloud, according to DeepField CEO Craig Labovitz. By comparison, YouTube last year accounted for 6% of all Internet traffic. ***tinyurl.com/cyrwdne***

Verizon LTE service offloads to private IP networks

VERIZON BUSINESS has a service that lets business customers connect LTE devices directly to their private IP networks for secure, high-speed Internet access. With Private IP Wireless LTE, customer LTE traffic is routed from the nearest cell tower to an enterprise gateway in a Verizon switching center. Data routed to and through the gateway is encoded, but not encrypted, and kept separate from the public Internet. Encryption of the data can be added, if desired. Among the potential benefits are: a secure way to wirelessly access enterprise applications from remote locations, seamless wireless backup in case wireline service goes down, and the ability to gain visibility to the mobile devices connected to company wireless routers through dynamic mobile network routing. ***tinyurl.com/cwxjy8z***

IBM bulks up on analysis tools

IBM IS amassing even more analysis expertise with the purchase of Varicent Software, a business intelligence software provider based in Toronto. Varicent Software collects reports of sales data from different systems, such as finance, sales, human resources and IT departments, and analyzes it to determine employee compensation, streamline territory assignments, manage sales quotas and monitor sales activities. The software will be folded into IBM's Smarter Analytics line, joining analysis software from previous acquisitions, including Algorithmics, Clarity Systems, OpenPages, Cognos and SPSS. In the big picture, IBM expects to generate $16 billion in the sales of data analysis systems and services by 2015. ***tinyurl.com/cnzw5t3***



IT VIDEO

Why gamification matters to enterprises

Check out video of sessions from last month's CITE 2012 (Consumerization of IT) conference, including a cool presentation about gamification, and why companies should adopt similar strategies for their businesses. ***tinyurl.com/d5qn959***

Don't we pay enough taxes on wireless?

NEW YORK Attorney General Eric Schneiderman has filed a $300 million lawsuit against Sprint Nextel, alleging that the mobile provider has deliberately under-collected $100 million worth of state and local sales taxes on mobile phone service in an effort to gain a competitive advantage. "By deliberately evading sales taxes, Sprint cost state and local governments over $100 million that could have been used for critical services and much needed resources," Schneiderman said in a statement. Sprint denies the charges. "We have collected and paid over to New York every penny of sales taxes on mobile wireless services that we believe our customers owe under New York state law," said spokesman John Taylor. "With this lawsuit, the attorney general's office is claiming New York consumers, who already pay some of the highest wireless taxes in the country, should pay even more. We intend to stand up for New York consumers' rights and fight this suit." ***tinyurl.com/czkrqkx***

BYOD pros and cons

DESPITE MYRIAD security concerns and manageability challenges, there are positive effects associated with the BYOD trend, according to a survey of IT pros jointly conducted by *Network World* and SolarWinds. Among the respondents whose companies allow personal mobile devices to access the corporate network, 46.2% said the policy has increased productivity among end users. A nearly similar number (47.2%) said it has increased end users' ability to work from home. On the downside, 65.3% said they don't have the necessary tools in place to manage non-company-issued mobile devices on the network. ***tinyurl.com/brluumd***

Hospitals seeing more patient data breaches

A BIANNUAL survey of 250 healthcare organizations shows breaches exposing patient data are on the rise. The survey, commissioned by Kroll Advisory Solutions, found 27% of respondents had at least one security breach over the past year, up from 19% in 2010 and 13% in 2008. Also on the rise is the percentage of problems that originate from laptops and mobile devices (22%, up from 11% in 2010) rather than misuse of paper records. In addition, 10% of respondents reported data breaches related to third-party vendors that store healthcare data, up from 6% in 2010. ***tinyurl.com/7dusm3j***

Record demand for Linux skills

LINUX JOB listings hit a new high in early April, according to career site Dice.com, which reports seeing greater urgency in employers' search for that talent. As of April 2, there were 12,007 Linux-related postings on Dice, which represents a 17% spike compared to a year ago. As a result, employers are paying higher salaries and bigger bonuses as well as offering flexible work schedules and additional training, according to a report published by Dice and the Linux Foundation. ***tinyurl.com/d3954c***

PARITY BITS

$388 MILLION

The amount Facebook spent on R&D last year (10.5% of revenue), **up 169% from 2010**.

GOOD | **BAD** | **UGLY**

good

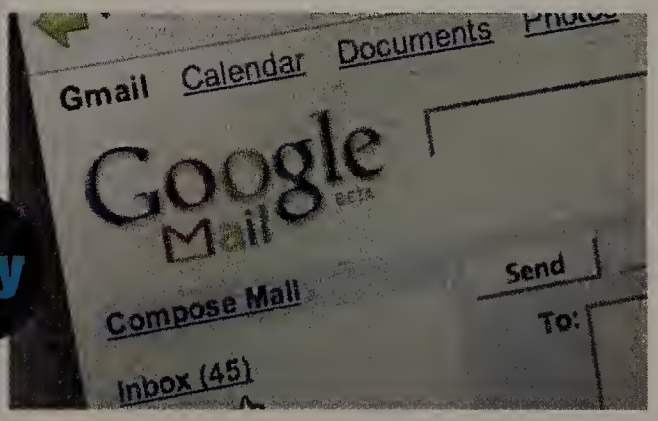
Techie words of wisdom

A HANDFUL of high-profile techies will be sharing their pearls of wisdom with graduating college students next month, including IBM Chairman Sam Palmisano (Johns Hopkins University), Apple co-founder Steve Wozniak (Santa Clara College), Cisco SVP Wendy Bahr (Old Dominion University) and LinkedIn co-founder Reid Hoffman (Babson College).

bad

Eau de MacBook?

ARTISTS IN Australia have reproduced the smell of a newly purchased Apple product and plan to set it free at an exhibition in Melbourne. The final scent encompasses "the smell of the plastic wrap covering the box, printed ink on the cardboard, the smell of paper and plastic components within the box and of course the aluminum laptop which has come straight from the factory where it was assembled in China," according to *PC World*. No actual fragrance is planned for sale.



ugly

Gmail goes down

GOOGLE SAID last week that "less than 10%" of Gmail's user base was affected by an hour-plus outage on Tuesday, April 17 (up from an earlier estimate of "less than 2%"). That adds up to about 33.2 million people potentially missing out on lots of useful and useless messages. Google apologized for the issue, though didn't explain what went wrong.

DEMO 2012 products that cater to the enterprise

BY COLIN NEAGLE

WHILE MUCH of the draw to the 2012 DEMO conference in Santa Clara, Calif., surrounded consumer technology, such as the fantasy politics game or the electric skateboard, the conference still had plenty to offer those with a mind toward work productivity.

Security

DEMO isn't what many would consider a security-focused event, but two companies showcased their offerings for the burgeoning mobile security market.

First, there's zImperium's zDefender, which sets up automatic traffic filters and a remote management console to help reduce smartphone threats. The company also offers a suite of security services, such as its "ethical hacking exploit-as-a-service," which enables enterprise security administrators to find vulnerabilities in the network from their smartphones.

Separately, TrustGo Antivirus & Mobile Security focuses on mobile app stores, offering a scanning service to identify which apps may be dangerous.

Hazelcast is a potentially useful tool for cloud application developers.

Cloud communications and collaboration

A handful of exhibitors looked to turn more people onto the cloud, be it for sharing information and collaborating on work documents or reducing costs of communications systems.

CollateBox allows users to store, share and modify data lists, while DocSync and rollApp's OpenOffice integrated with DropBox do the same for iPad users looking to access their own data on the fly. ProjectFootage, meanwhile, focuses on sharing video projects over the cloud and can be customized as an add-on to current websites.

Hoiio Live offers a handful of cloud-based communications options, namely Internet phone for conference and long-distance calls and a mobile chat service, and provides the management tools to store and update contacts or keep track of use across the enterprise. Similarly, RingCentral Office provides support for both in-office and mobile cloud PBX systems.

For email, there's ZigMail, which doesn't necessarily enable cloud-based collaboration or communications itself, but simply makes them easier to deal with. ZigMail is a separate email inbox that connects to the user's individual account solely for the purpose of collecting junk and other non-urgent mail. So, for those whose important messages get drowned out by alerts from social media accounts or deals sites, ZigMail may be the perfect solution to help weed out the unnecessary. The separate ZigMail account also sends one daily update showing the subject lines of the forwarded emails, so the user can get an idea of what else may need to be addressed.

Mobile apps and HTML5

As more businesses look to interact with customers via mobile formats, a couple of exhibitors aimed to make the process easier.

UppSite claims its offering for turning a content-based website into a cross-platform mobile app takes just two minutes. Seeing as it's also free, it may be worth a shot.

Another option, pieOS from Bluega, acts as a customized HTML5-based homepage with the intent of creating a seamless intuitive smartphone user interface to Web browsers accessed on any device.

Small and midsize businesses

A handful of options for the small and midsize business market were also displayed, most of which had the common intent of offering cloud-based management tools.

Agiliron caters to product-based small businesses and helps keep track of sales channels and business intelligence as well as front- and back-office management. In its software-as-a-service (SaaS) format, it aims to satisfy those running SMBs who may also be on the move.

Tabillo offers an online collaboration and file-sharing service that allows users to organize their own workspaces or create custom applications, while the SaaS-based BizSlate ERP aims to fill the gap between ERP offerings and the SMB. According to last year's Aberdeen Group study, in which 55% of responding SMBs said they would consider SaaS for their ERP tools, that gap may be closing.

Miscellaneous

Other innovations displayed at DEMO addressed a few of the less common issues encountered in the workplace.

PaperHater — a website and an iPhone app — aims to further reduce the amount of paper used in the workplace, and scans everything from typed print to handwritten notes and multiple-choice answers on surveys. The information is then forwarded to the appropriate applications, such as Outlook or Quickbooks.

For those with intensive data management tasks ahead of them, Hazelcast is an open-source in-memory data grid that reorganizes some of the data management tasks that can cause latency while trying to develop cloud applications. Similarly, the Fusion-io ioMemory platform is a NAND-based virtual storage layer software that aims to reduce latency on enterprise applications that are already in use.

Finally, there's Tradesparq.com, which filters through the wide base of social media contacts surrounding businesses to help find relevant sales leads. With the aim of facilitating access to relevant contacts, Tradesparq offers the service through Facebook, Google, Yahoo, LinkedIn, Hotmail, and Chinese social networks QQ and Sina Weibo. ■

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Companies partnering to grow data centers

BY ANN BEDNARZ

DEMAND FOR data center space is on the rise. IT pros responsible for facility planning are juggling physical requirements for secure, power-abundant space with operational considerations, including the need to improve disaster recovery, deploy new applications and services, and handle increasingly large data volumes.

In its annual study of the North American data center market, published last month, Digital Realty Trust found a nearly unanimous need for more data center space among the 300 large enterprises surveyed. A full 92% of respondents said their companies will definitely or probably expand their data center space in 2012 — the highest percentage in the six years that Digital Realty has conducted its survey. Among those respondents with concrete plans to expand in 2012, 38% expect to expand in three or more locations.

Digital Realty Trust expanded its San Francisco footprint this year with the acquisition of a 155,000-square-foot data center facility adjacent to its existing 365 Main St. facility.

The scale of projects being planned is also increasing, reports Digital Realty, which is one of the largest providers of data-center real estate. Roughly half of respondents (54%) said their projects will exceed 15,000 square feet, and 49% expect their data center projects to be supported by at least 2 megawatts of electrical power (including 12% that are planning data center projects with 5 megawatts or more).

The growth isn't unexpected. Even during the IT project-crippling years that followed the financial industry meltdown in 2008, data center construction didn't dramatically slow, according to Matt Stansberry, director of content and publications at Uptime Institute. In its most recent poll of data center managers, Uptime Institute found that 80% of respondents have built a new data center or upgraded an existing facility within the past five years.

"You still need data center capacity, whether or not the economy booms," Stansberry says.

But what has changed is how data center space is being built or acquired. In the Digital Realty survey, 78% of respondents with expansion plans in the works said they intend to use a partner — such as a wholesale data center provider or a design/build partner — for one or all of their projects.

That's a significant shift in mindset from years past, when the largest companies tended to keep data center development in-house. "We see a lot of people looking at [colocation providers] and third-party data center service providers who wouldn't have before," Stansberry says. "These are people who traditionally have run their own data centers, but that's shifting pretty rapidly."

Even companies such as Google and Yahoo, which are known for building their own cutting-edge data centers, are supplementing in-house development with third-party providers including Equinix, which specializes in network-neutral data centers and interconnection services.

"They'll come to Equinix for the network hubs when they need low latency and access to multiple networks," says Mark Adams, chief development officer at Equinix.

Other reasons large enterprises are considering third-party providers include the high cost of constructing a private data center and the continuing lack of enterprise capital expense funds. In addition, the collocation market has matured, and enterprises are more comfortable handing over non-core, engineering-heavy construction tasks to data center providers that specialize in that kind of work. "There weren't that many collocation providers five years ago that could provide enterprise-class data centers for a financial organization," Stansberry says.

Certifications by the Uptime Institute, which offers a tier system that ranks data centers according to their expected levels of uptime and availability, show evidence of the trend. In the last couple of years, certifications for collocation and third-party providers' facilities have jumped significantly, and today account for roughly 50% of the certifications Uptime conducts, according to Stansberry.

Another trend catching on is containerized data center capacity. In the Digital Realty survey, 41% of respondents reported plans to use a containerized module as part of their expansions. Uptime Institute notes a similar uptick, though not as drastic. "About 10% of our market said that they have deployed modular, prefabricated data centers, and another 8% said they're planning to," Stansberry says.

Going wholesale

The managed data center services the enterprises are tapping "run the gamut from somebody just building a raised floor and handing you a key to the building, to something as specific as cages in a site that's fully staffed," Stansberry notes.

Vantage Data Centers, a wholesale data center provider, gets its tenants involved in the construction process early on, so they can customize attributes such as size, density, rack layout, distribution and cooling in their space.

"In wholesale data centers, you end up managing your infrastructure, you bring in your racks and stacks, and we furnish and lease the actual building, optimized for your infrastructure," says Greg Ness, chief marketing officer for Vantage. During design and construction, "there's a significant level of alignment and coordination between the enterprise and Vantage."

One of those tenants is Mozilla Corp., which recently decided to make the leap from multiple retail collocation providers to a wholesale data center model. Mozilla's plan is to consolidate its four Silicon Valley data centers (which include space in facilities owned by CoreSite, Internap and Layer 42) into a single Santa Clara, Calif., facility owned and renovated by Vantage.

The tipping point came when Mozilla realized it was consuming more than 400 kilowatts of power in its multiple data centers, recalls Matthew Zeier, director of IT operations for Mozilla.

"At some point, this model doesn't work. We're spending a lot of money on power. So the cost model started to change," Zeier says. "At this level, it started to make sense to look at moving away from a retail model and into a wholesale model." ■

Microsoft overhauls licensing for System Center 2012

BY TIM GREENE

MICROSOFT HAS formally shipped System Center 2012 management platform, adding features that create application-centric views of corporate infrastructure and — just as important — implementing a new licensing scheme designed to capitalize on customers' frustration with competitor VMware.

Microsoft says the new licensing structure cuts the number of license packages to two — standard and data center — down from nearly 100, a move the company says will make life simpler for IT departments.

Rather than buying the component parts of System Center singly or in bundles of just a few, customers will buy the entire suite.

That's good news for the largest businesses that are heavily investing in private cloud architectures and buy the data center license, says Paul DeGroot, principal consultant at Pica Communications.

The price of a data center license jumps from $2,620 for two processors and unlimited virtual machines to $3,615, he says. "There might be a bigger initial payment, but it covers all the virtual machines on a server," he says, as well as the full suite of features, including new ones.

While new customers will still be able to buy certain individual components as standalone products the option of buying just single components of System Center such as Configuration Manager or Operations Manager are pretty much gone. "It's all or nothing, folks," he says. "You're either going to use [Microsoft] management tools to do everything or you're not going to use [Microsoft] management tools."

He says this follows the successful model of VMware and pricing for its management platform.

The old licensing system with scores of bundle options was complex, DeGroot says, and often led to confusion. For example, if a customer wanted a System Center bundle that included a component they had already licensed for another purpose, it involved negotiation to decide what the additional license fee should be, he says.

Under the new structure, even if customers wind up buying a bundle that includes pieces they never use, the cost is manageable. "These products aren't terribly expensive compared to, say, SQL Server," he says.

It could even save them money, says Don Retallack, an analyst with Directions on Microsoft, depending on the blend of physical and virtual machines in their infrastructure. Current customers will be eligible for grants from Microsoft to ease the cost of upgrading, he says.

What's new with System Center 2012

App Controller
Provides self-service provisioning of applications with a single dashboard that manages components of deployed applications including the underlying infrastructure on which they run.

Endpoint Protection
This consolidates desktop management and security, including malware protection and determining configuration compliance for client machines. (Previously a separate product.)

AVIcode technology (acquired in 2010) Application performance monitoring for the Microsoft .NET Framework to help ensure availability of business-critical applications and services, including web-based and distributed applications.

Bundled SQL Server
Previously packaged separately.

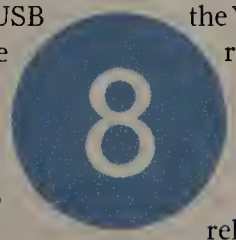
The pricing structure is important, says Matt Stratton, director of technology operations for online rental service apartments.com. Shifting from VMware to System Center 2012 resulted in a 70% savings in maintenance costs, he says. The company beta tested the platform and switched over to it before its general release.

► *See* **Microsoft,** *page 12*

Windows 8 Enterprise holds bag of goodies

BY TIM GREENE

THE ENTERPRISE version of Windows 8 will include a list of exclusive features, among them a desktop that is bootable from a USB stick, a standby VPN, a caching tool to boost branch-office download performance and upgraded virtual desktop client.



Windows 8 Enterprise will boast Windows to Go, a manageable Windows 8 desktop on a USB stick that enables booting up a corporate machine securely on whatever machine is available, according to the Windows for your Business Blog.

The desktop-on-a-stick is meant to support a bring-your-own-device atmosphere within corporations, where workers' machines can safely plug into corporate networks without the risk of infecting other devices.

The software, which includes all of Windows 8 Pro plus some extras, is one of four versions that will become available later this year or perhaps early next year: Windows 8, Windows RT, Windows 8 Pro and Windows 8 Enterprise.

The enterprise version will provide DirectAccess, an auto-setup VPN that admins can use to patch, update and set policies on remote machines. The tool supports IPv4 as well as IPv6, Microsoft says.

Branch Cache enables storing content from corporate servers within branch offices so when it is called for repeatedly it doesn't have to cross the WAN over and over, reducing traffic on the wire and improving response time. When used in combination with Windows Server 2012, which is available later this year, Branch Cache will be easier to deploy and scale, and will improve security as well as optimize use of WAN bandwidth further.

Virtual desktop capabilities within Windows 8 Enterprise rely on upgrades to Windows Server 2012 and Microsoft Remote FX that support bandwidth intensive 3D graphics and use touch-enabled devices for VDI over any type of network.

AppLocker is a feature that can be configured to restrict access to files and applications that are accessible to individuals or groups. Windows 8 Enterprise also includes App Deployment, a capability that enables side-loading Windows 8 Metro style applications onto Windows 8 PCs and tablets. This would get around the restrictions on Windows RT hardware-software bundles that allow only apps from the Windows Store to be loaded on the machines. ■

The sorry state of federal IPv6 support

99% of US government websites don't support IPv6 as deadline looms

BY CAROLYN DUFFY MARSAN

U.S. FEDERAL government agencies must meet an aggressive deadline of Sept. 30, 2012, to deploy IPv6 on their public-facing websites, under an Obama administration initiative. But with less than five months to go, more than 99% of federal websites aren't supporting the next-gen Internet Protocol on their DNS, email and Web services.

The Obama administration issued a directive in fall 2010 that requires agencies to support IPv6 on their public-facing Web services by the end of this federal fiscal year. There is a second step to the mandate that requires agencies to support IPv6 on their internal, operational networks by Sept. 30, 2014. It's unclear what the consequences are of not meeting the mandates will be.

Experts say federal IPv6 deployment has lagged due to a lack of support for the emerging standard by government contractors, including carriers, content delivery networks and their network equipment suppliers.

"Agencies are supposed to have the general Internet-based services that are available to citizens support IPv6," said Dale Geesey, COO at government contractor Auspex Technologies, at last week's North American IPv6 Summit in Denver. "It's a big challenge from a federal perspective."

He said the Federal CIO Council has an IPv6 task force that meets weekly and that agency's IPv6 transition managers are meeting monthly to help the government hit this goal.

A survey conducted weekly by the National Institute of Standards and Technology (NIST) shows that only five organizations have successfully deployed IPv6 on their DNS, email and websites as required by the mandate. These organizations are: the Department of Veterans Affairs, the Environmental Protection Agency, the Defense Research and Engineering Network, Defense High Performance Computing, and the Space and Naval Warfare Systems Command.

In total, only 10 out of 1,565 domains operated by federal agencies were able to pass NIST's tests for IPv6 support on DNS, email and Web this week. That's not even 1% of the total number of domains tested.

Ron Broersma, DREN chief engineer, told the North American IPv6 Summit audience that IPv6 is ready for deployment. "Security and performance of IPv6 is equivalent to IPv4," he said. "IPv6 deployment doesn't have to be costly if you use tech refresh and if you don't procrastinate."

Broersma said one challenge for federal agencies is that some of the carriers they are required to use through the Networx contract are not providing sufficient IPv6 services. Networx is an umbrella telecommunications contract that federal agencies must use to purchase voice, video and data services.

"One [carrier] won't have it until the end of the calendar year," Broersma said. "Some federal agencies may need to switch ISPs, which is a pretty big deal."

Broersma said two federal network security efforts — the Trusted Internet Connect Initiative and Managed Trusted Internet Protocol Services — also are behind on deploying IPv6.

Broersma said other challenges for federal agencies trying to deploy IPv6 are the lack of feature parity between IPv4- and IPv6-based network hardware and software, as well as the lack of support for Dynamic Host Configuration Protocol for IPv6.

"Existing security products lack IPv6 support. Mainstream intrusion-detection systems are not ready," he added. "But we have a much better story for doing network management over IPv6 than two years ago."

One federal agency that's successfully deployed IPv6 is the VA, which has IPv6 deployed on 99% of its websites. Steve Pirzchalski, IPv6 transition manager for the VA, said the agency has IPv6 support for its DNS, SMTP/mail and Web services for all of the websites under its va.gov domain.

"We did get our gateways transitioned, which was not inconsequential. We launched our main website — www.va.gov — for World IPv6 Day last June, and we've had continuous IPv6 operation since then," Pirzchalski said.

One development that will aid federal agencies' ability to meet the Obama administration's IPv6 mandate is the availability of production-quality IPv6-to-IPv4 translation services from Akamai Technologies. Akamai, a leading CDN, says it will launch IPv6 services in April. Akamai's federal customers include the Department of Defense, the Food and Drug Administration and the Federal Emergency Management Administration.

Another development expected later this month is the release of Version 2.0 of a document called "The Planning Guide/Roadmap Toward IPv6 Adoption within the U.S. Government." The original version of this document was released in 2009.

IPv6 is an upgrade to the Internet's main communications protocol, IPv4. IPv6 features an expanded addressing scheme that can support billions of devices connected directly to the Internet. But IPv6 is not backward compatible with IPv4, which is running out of addresses. Network operators can either support both protocols in dual-stack mode or translate between the two. ■

► **Microsoft,** *from page 11*

Taking advantage of features in the Microsoft platform that VMware's lacked will lead to further savings, he says. Apartments.com writes its own customer-facing Web apps using agile software development methods and has a free-standing development network that is now supported by System Center 2012, which includes a new component, App Controller.

App Controller gives developers the ability to set up virtual machines to run specific versions of applications to test against new apps, he says. They don't have to wait for IT to do it by hand. If the developers are on a two-week sprint to complete an application, that feature alone could save 10% to 20% of the time it would take otherwise, he says.

"When it comes into play it's going to be big for things that have to happen fast," Stratton says. "We can get a product out that is more stable more quickly."

This is one of the goals Microsoft had for System Center 2012, says Edwin Yuen, the company's director of cloud and virtualization strategy. The platform is designed to encourage self-service so when a department needs more resources for an application, they can spin up additional CPUs or virtual machines themselves, he says.

In order to accomplish this, the management software is compatible with multiple hypervisors and operating systems and can automate configuration and the handling of outages. So if a virtual machine goes down System Center 2012 can automatically respond based on preset policies to deal with such a situation. And this can be done across the range of available resources from dedicated servers to physical and virtual machines in a cloud, the company says. With this type of management and automation, staff can free up time from mundane chores. ■

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▶ **Cisco,** *from page 1*

also the threat it poses to it.

"Networking is about to be reinvented and Cisco will do that reinvention of networking," says Cisco CTO Padmasree Warrior, during an interview last week at Cisco's annual business partner conference. "We understand the implication of what is good about it and what are the things we need to improve."

The single most visible aspect of Cisco's programmability strategy -- the company seems careful not to label it as an SDN initiative -- is Insieme, the Cisco-funded startup building what is believed to be a programmable switch line supporting OpenStack and distributed data storage. Cisco initially invested $100 million in Insieme, with the right to purchase the remaining interests of the company for up to $750 million..

Other facets of Cisco's programmability strategy include adding features to its NX-OS data center network operating system for "agility and scale," Warrior says; getting the Nexus and Catalyst switching lines on common ASIC and software road maps; and extending the road map of the Nexus 1000v virtual switch, which Cisco claims is a pioneer in SDNs.

"Not all customers want programmability. [A] very small subset wants programmability. A lot of our customers are happy to leave everything to us to allow them to be programmed.

PADMASREE WARRIOR, CISCO CTO

"Probably the first software-defined network in the industry was the Nexus 1Kv," Warrior says. "That started with 10 engineers as a project within Cisco."

There are now more than 5,000 customers for the Nexus 1000v, which has been shipping since 2009.

Another aspect of the programmability strategy is to do nothing to let customers program their Cisco networks.

"Not all customers want programmability," Warrior says. "[A] very small subset wants programmability. A lot of our customers are happy to leave everything to us to allow them to be programmed. So we have to be careful that we don't equate software-defined networking with only one aspect of it."

Cisco's multipronged approach is intended to address various business and use cases its vast installed base of customers face. It also includes support for various standard and non-standard techniques, such as OpenStack and OpenFlow, but is not founded on any one.

"OpenFlow . . . we look at it as one way to achieve that programmability," Warrior says. "Certain customers want to experiment with OpenFlow and we'll support them with that. We don't believe it defines software-defined networking or programmability. It is one tool or one approach to do that. Similarly, with a software controller that's one way to deploy network services. So there will be multiple ways to get to that endpoint."

Customers with "massively scalable" data centers are prime targets for SDNs to manage increasing "East-West" traffic flows between server racks in flatter topologies with multiple active links, Warrior says.

"But for the majority of enterprises, it isn't," she says.

So Insieme is but one component of Cisco's overall programmability strategy. And its products aren't expected for another two years, at least.

But sources say in the interim — over the next six to 12 months — Cisco is expected to unveil new products with SDN capabilities that make the network more programmable.

And on the network commoditization threat? Leadership in networking is much more than programmable technology, Warrior points out.

"When somebody else is coming up with ideas, you drive innovation faster," she says. "At the end of the day though, networking is an infrastructure. And to lead in that market you need to have a great channel and great go-to-market program. You won't be able to be successful in the marketplace with just technology. This is where Cisco leads everybody else in the industry." ■

Cisco unveils new branch-to-cloud offering

HERE'S A QUICK LOOK AT SOME OF THE KEY NEWS OUT OF CISCO'S PARTNER SUMMIT IN SAN DIEGO LAST WEEK

Cisco next month said it will release router software designed to improve cloud computing connectivity for branch offices. Cisco will unveil Cloud Connect on May 22, said CTO Padmasree Warrior during her Cisco Partner Summit keynote address. Cloud Connect will run on Cisco's ISR G2 and ASR 1000 routers, and provide visibility, security, availability and performance optimization for cloud connectivity, she says. The software is designed to improve the user experience with cloud and simplify operations, Warrior says. Cisco will demonstrate the software at the Cisco Live! conference in June as well, she says. ● CEO John Chambers confirmed that the company is funding and plans to absorb Insieme, a start-up developing a software-defined networking (SDN) system. Insieme is led by three Cisco engineers: Mario Mazzola, Luca Cafiero and Prem Jain. The three led two other Cisco spin-in start-ups — Andiamo Systems, which made storage-area network switches, and Nuova Systems, which developed Cisco's Nexus 5000 series data center switches. ● Cisco is beating back the competition Chambers said during his opening address. "I'm not so sure the competition is getting tougher," he said. "It's not as tough as it was a year ago." Chambers, of course, was referencing the past 12 to 18 months, when Cisco went through a dramatic restructuring after the company got, in his words, "fat." Cisco trimmed more than 12,000 positions, killed or downscaled underperforming product lines and markets, simplified operations and got mean - at the competition. "Juniper and HP are not any tougher than they were a year ago," he said. Juniper, he said, is guilty of "marketing ahead of where they were, spreading themselves too thin." — Jim Duffy

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TOOLS

Google AROUND, network scanning, and pinging with TCP

We start this week with a real geek out: If you have ever had to weigh the benefits and tradeoffs of Apache as an application server (for example, using Tomcat vs. node.js ("a platform built on Chrome's JavaScript runtime for easily building fast, scalable network applications"), then you absolutely have to watch "Node.js Is Bad Ass Rock Star Tech" (it's NSFW — bad words). Make sure you watch all of it . . . the end is great!

Mark Gibbs' Gearhead

So, this week I have a few tasty techie delights to please your palate.

The first is Google's AROUND. Unless you're a die-hard Microsoftie you probably use Google quite frequently to search the Web (does anyone still use Yahoo?) and, being the well-informed chap or chapess you are, you likely know about the search operators you can use, such as "-" to exclude specific words or phrases and "OR" to, well, "or" words and phrases.

But here's an operator you might not be aware of: the "AROUND" operator. According to the Search ReSearch blog written by Daniel M. Russell, AROUND "has been operational for . . . oh . . . the past 5 or 6 years. Turns out that nobody ever bothered to write much about it."

A good example of how to use AROUND is given in one of the comments to the posting: If you were looking for [Paul "the dude" SMITH] (we're using Google's convention for delimiting search terms with square brackets) but you didn't know his alias you could search [paul AROUND(3) smith].

"The number," Russell says, "sets the max distance between the two terms." Pretty slick.

Next up, Advanced IP Scanner.

If you're on Windows and you find that you often need to survey your TCP/IP-based network to find out what devices are running, the latest version of Advanced IP Scanner published by Famatech (purveyors of the fine remote access utility Radmin) is a must-have.

Advanced IP Scanner is a free tool that allows you to scan an IP address range. It's very fast and you can choose whether to show "alive" and/or "dead" addresses, the device manufacturer's name, the device MAC address, the current user (if available), the associated DNS name and, optionally, the NetBIOS names and groups the device uses. It can also scan for shared folders, HTTP and HTTPS, and FTP services and Radmin availability and can save scan results.

Advanced IP Scanner is incredibly useful and gets a Gearhead rating of 5 out of 5.

Then we have tcping. If you need to check if a single TCP/IP device is "alive" you'll most likely launch a command session under Windows and "ping" the target machine. What Windows ping uses to check on a remote machine is Internet Control Message Protocol, or ICMP. Unfortunately, to foil hackers and the like, net admins will occasionally disable responding to ICMP, so, to test if an ICMP-blocked device is alive, you'll need to use some other protocol such as HTTP.

To do this you might choose another free tool, tcping, published by Eli Fulkerson. Fulkerson describes this as "a small console application that operates similarly to 'ping,' however it works over a TCP port. Not a terribly interesting concept, but I had trouble finding a Windows utility to do this that I was happy with." I love this! Very useful, simple, does the job, and gets a Gearhead rating of 5 out of 5. ■

Gibbs is geeking out in Ventura, Calif. Send your techiness to gearhead@gibbs.com.

PARITY BITS

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Annual cost savings for decommissioning a 1U server ($500 in energy savings, $500 in the OS license, $1,500 in hardware maintenance). SOURCE: UPTIME INSTITUTE

GADGETS

Some new devices to mess around with Wi-Fi

Keith Shaw's Cool Tools

Hold off on buying the iZON room monitor just yet.

THE SCOOP iZON Remote Room Monitor

by Stem Innovation, about $130

▶ **What it is:** A network-based camera that connects via Wi-Fi, the iZON Remote Room Monitor lets you watch rooms in your house or office remotely. The monitoring is done via the Stem:Connect iOS app, letting you see live images coming from the camera, or setting up motion-detection or sound-detection alerts. When the motion or sound is detected, the clip can be uploaded to your YouTube account as well.

▶ **Why it's cool:** This device and app were developed first for mobile devices, unlike other devices that rely on monitoring via a Web browser — in fact, you can't watch your camera's feed through a PC browser (the company says a Mac app is coming, and other methods down the road). The small device is inconspicuous, and would work well as a baby room monitor, or if you have a second house and/or office and want to be alerted if the device detects motion. The YouTube upload option is also a nice touch. The camera and app were somewhat easy to hook up, as long as you're using an 802.11n Wi-Fi router with WPA2 (not WEP) security.

▶ **Some caveats:** I had trouble with the motion alert and YouTube uploading; sensitivity adjustments need to be made so that you're not constantly getting alerted with very tiny motion settings. But at low sensitivity settings, I was consistently not receiving alerts, even though I knew motion was going on (I was recording video in the office). The device and app are a work in progress; I'd wait until Web browser monitoring and other settings were added to the system.

▶ **Grade ★★★ (out of five).**

THE SCOOP Wireless Dual-Band Travel Router

by Belkin, about $80

▶ **What it is:** This small device provides a wireless router capability for travelers, hooking into a hotel's wired Ethernet connection and providing wireless connectivity for tablets, smartphones and notebooks. The wireless capabilities allow you to use one connection for multiple devices.

▶ **Why it's cool:** This is one of the first devices I've seen that provides dual-band (2.4GHz and 5GHz frequency) connectivity, although most of your wireless clients are likely on 2.4GHz. Still, as more devices add 5GHz functionality, having this option for lower interference and greater bandwidth is nice. Even if you only plan on using one notebook in your hotel room, it's nice to have this in case the hotel's Ethernet connection is in an odd place (on my last trip, the Ethernet cable was located on the night stand next to the bed, not near the desk).

▶ **Some caveats:** Changing the SSID on the device from the default setting is a bit tricky, and there are no additional Ethernet ports for wired LAN connections (in case you wanted to provide mobile workers with additional connection choices).

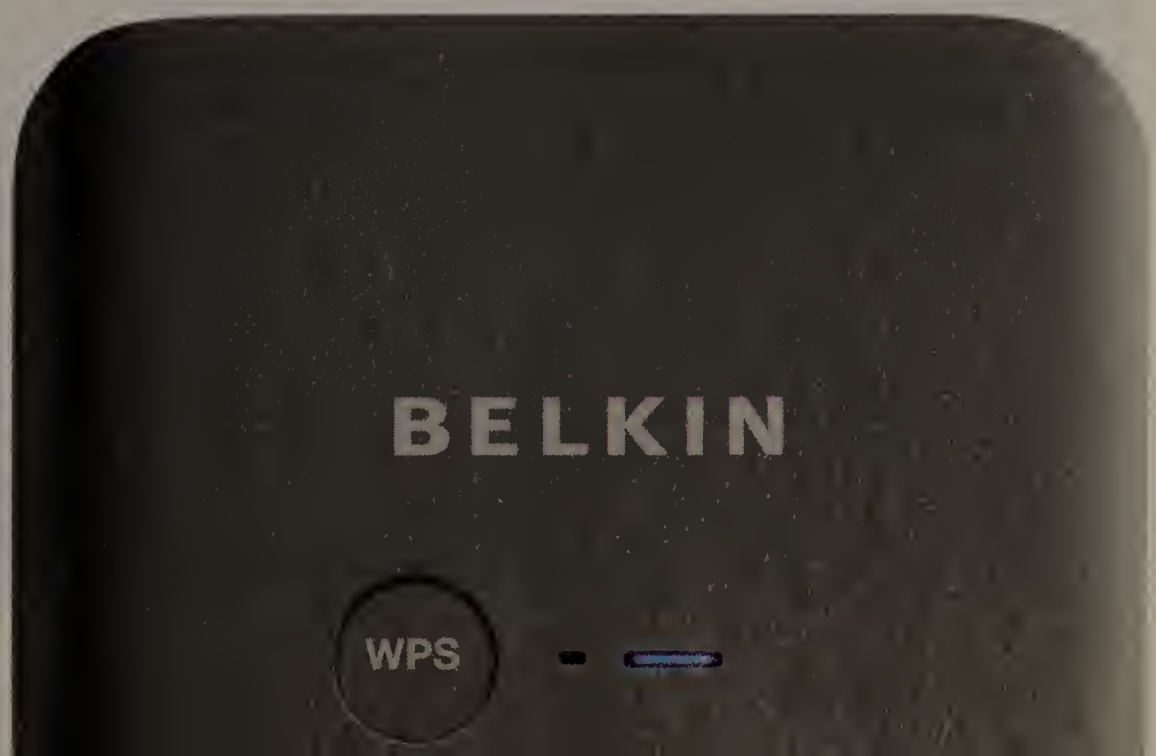
▶ **Grade ★★★★**

UPDATE

▶ **Seagate recently updated** the firmware of its GoFlex Satellite external hard drive. With its internal Wi-Fi radio — along with the GoFlex Media app for iOS devices — you can store a ton of media (photos, videos, music) on the external storage drive and access them on the iPhone, iPod Touch or iPad via the Wi-Fi connection. The update now provides an ingredient missing from the original release: The Wi-Fi on the Satellite can connect via Wi-Fi to your home router, providing pass-through connections for other apps on the iOS device. So now, you can access your media through the GoFlex Media app, but you can also browse the Web or access Netflix through your home router's connection. Before this update, you had to keep switching your Wi-Fi settings in order to multitask.

This update makes the Satellite a 5-star product, and a must-own for any iPad or iPhone user who doesn't want to clog up the device's internal storage space. ■

Shaw can be reached at kshaw@nww.com.



techdebate

EXPERTS FACE OFF *on the* HOTTEST TOPICS

Is broadband stimulus really needed?

Lifeblood of an information economy

Stephen Alexander, senior vice president of products and technology, Ciena

THE AMERICAN RECOVERY AND REINVESTMENT Act of 2009 (ARRA) set aside $7.2 billion to bolster construction and use of broadband Internet access throughout the United States. The act's intent was to create short-term economic activity and establish infrastructure that would encourage further economic development. Because broadband plays such a critical role in supporting and enhancing education, healthcare and public safety, ARRA and broadband stimulus projects like it are fundamental investments in the American economy that will return dividends for years.

Before asking whether more stimulus is needed, we first need to stress the value of broadband access. Value is not constrained to data rate, but rather is about the applications high-quality broadband supports, such as rapid access to healthcare records, distance learning, electronic commerce or petascale science. The value of quality broadband is foundational to a modern economy.

The Organisation for Economic Co-operation and Development (OECD) completes an annual ranking of broadband adoption in the world's major industrial economies. In 2009, the U.S. was ranked 15th based on speed, number of subscribers per household and price. The U.S. has slid from a top position since 2000, not because the speed available to consumers has decreased, but rather because competitive offerings have not kept pace with changing application needs and technical capability.

OECD contends that countries such as Korea, Iceland, Sweden and Canada have risen to top rankings because of government incentives. We have seen other nations adopt national broadband initiatives as a tool to increase their global competitiveness. As state-of-the-art broadband changed from 56Kbps dial-up to faster DSL, cable or optical speeds, other economies continued to upgrade their broadband infrastructure. The U.S. has not kept pace.

The National Telecommunications and Information Administration says the number of U.S. households with broadband connections ranges from 70% penetration in urban areas to 57% in rural.

The Federal Communications Commission's

► *See* **Alexander,** *page 19*

Broadband doesn't need gov't 'stimulus'

Andrew Moylan, vice president of government affairs, National Taxpayers Union

THE FEDERAL GOVERNMENT NEED NOT "stimulate" markets which are expanding dramatically on their own. In recent years, we have witnessed an amazing proliferation of access to broadband Internet, all achieved without the heavy hand of government's guidance. While gaps in service remain, the exorbitant costs associated with filling them counsel for restraint, not ever-greater subsidies.

If broadband access were not widespread, this might be a more interesting discussion. But it is widespread, and incredibly so. According to projections based on a 5,000-person survey conducted by the Federal Communications Commission (FCC) in its 2010 National Broadband Plan, 200 million Americans have landline broadband service. Little more than a decade prior, that number was just 8 million.

But building from scratch to a market where 2 of every 3 Americans have adopted broadband services in 10 years only tells one part of the story. An equally important metric is access. Here, the results of the FCC survey are even more staggering. Though not everyone subscribes, 95% of people have landline broadband service available to them, and fully 98% have access to 3G wireless broadband service through mobile phone networks.

If access is this pervasive, what are we stimulating? These statistics seem to suggest that the most important thing we could do to boost adoption rates would be to make Americans richer and broadband services cheaper — both of which could be better achieved through careful tax and regulatory reform that fosters greater economic growth than through another stimulus plan.

Even Americans who live in remote areas outside the reach of most land-based services can choose from several satellite providers that offer speeds of 1Mbps (fully 18 times faster than dial-up) for $60 to $70 per month. That's not hyper-fast broadband speed, but it is perhaps a wiser choice than spending as much as the FCC estimates it would cost to build 4Mbps networks to reach these remote folks: a gulp-inducing $24 billion.

Economist Jerry Ellig of the Mercatus Center

► *See* **Moylan,** *page 19*

Is broadband stimulus needed?

Yes (71%)

No (29%)

Cast your vote and see comments at tinyurl.com/87cd5pc

▶ **Alexander,** *from page 18*

broadband plan set out to address this, with a goal of delivering 100Mbps access to 100 million users by 2020. This so-called 100/2 goal is based on reasonable assumptions of historical technology changes and application uptake over the past 10 to 15 years. Making 100Mbps service available to one-third of the population will result in better access to information and, in turn, allow for a widely distributed information workforce that contributes to the broader economy.

By design, ARRA includes incentives for adoption by community anchors such as educational institutions, healthcare facilities, public safety departments, libraries and local governments. This allows more of the public to benefit from the availability of broadband-enabled applications.

Early in 2012, ARRA-funded broadband projects were well underway across the country with many examples of community anchor involvement. For example, DC-CAN is a Washington, D.C., area network that will bring affordable broadband services to more than 250 healthcare, educational, public safety and other institutions in underserved areas of the district. Similarly, the Navajo Tribal Utility Authority (NTUA) is constructing fiber and wireless infrastructure to bring broadband service to roughly 100,000 people spread over a vast area in the Southwest.

The Rural Electrification Act of 1936 serves as a precedent for today's ARRA-funded broadband projects. By 1936, electricity was ubiquitous in urban centers but uncommon in rural areas. Technologies for power distribution made it difficult and expensive to deliver service, and utility companies had little reason to invest in expanding their service area. Through the REA, technologies were developed and infrastructure was constructed that made power universally available, resulting in better agricultural efficiency and contributing back to the U.S. economy to this day.

The landscape is similar today; projects such as DC-CAN and NTUA are examples where government investment today will result in technological improvement, infrastructure construction and long-term benefit. ■

Ciena is the network specialist, collaborating with customers worldwide to unlock the strategic potential of their networks and fundamentally change the way they compete.

▶ **Moylan,** *from page 18*

at George Mason University illustrates just how costly it could be to do things the FCC's way: "That $24 billion 'funding gap' also deserves comment. That's the amount of subsidy the [2010 National Broadband] plan estimates will be required to make 4Mbps broadband available to all Americans. If you read the plan carefully, you will also find that a whopping $14 billion of that is required to bring broadband to the highest-cost two-tenths of one percent of American housing units — 250,000 homes (see page 138 of the National Broadband Plan). That works out to $56,000 per housing unit!"

Incredibly, $56,000 would be enough to buy satellite Internet service for each of those rural households for the next 66 years.

Broadband stimulus is an incredibly attractive concept to some, but the fact of the matter is that broadband expansion has been humming along without it and several subsidy schemes carry with them real risks for taxpayers. For example, millions of dollars from the 2009 economic "stimulus" bill have been devoted to so-called "overbuilds," where a government-owned network is built in an area already served by several private competitors. These wasteful ventures do very little, if anything, to expand access and serve primarily to squander taxpayer dollars on creating a retail business run by inexperienced bureaucrats.

Politicians may not get to star in any of their ribbon-cutting ceremonies, but private wireless, satellite, telephone and cable companies have succeeded in spreading high-speed Internet access to nearly every American. All this happened largely absent substantial government involvement through planning, subsidies or predatory taxes and regulations.

Rather than insisting on driving us down the road to prosperity in a taxpayer-funded vehicle with a poor driver, government officials should instead focus on making that road smooth and free of obstacles for private providers. New attempts at broadband stimulus promise to make that path more difficult, not less. ■

The 362,000-member National Taxpayers Union (ntu.org) is a nonprofit, nonpartisan citizen group founded in 1969 to work for lower taxes, smaller government, and economic freedom at all levels.

Send Debate Suggestions to jdix@nww.com

Wired broadband instead

Stimulus funds should be used to build out wired broadband to rural America, which right now has no viable options for Internet access. Satellite has high latency. If wireless broadband is available it has ridiculously low bandwidth caps. Internet broadband access is this century's phone and electricity. **ETHAN SELTZER**

A worthy goal

Broadband stimulus has a worthy goal. But the telcos are concentrating on high-cost wireless build-outs with unrealistic costs and data caps. Only wired or non-telco wireless alternatives should be funded. The telcos get enough money form price-gouging that this is really questionable and needs close control and scrutiny. Priority should be given to non-telco alternates. **JERRY13**

Malinvestment

Any "stimulus" funds are going to be available at a different "cost" than the funds available otherwise. This causes an unsustainable distortion in what is being invested. Either more is built than will be required, and that excess will not be available where it would otherwise be used, or the actual needs will not be met because resources were expended elsewhere. Which is really just two ways of looking at the same problem. That's leaving out the fact that this money must be taken from people first, through taxation or inflation, which they would otherwise have spent on the things they actually wanted. Some of which might very well have been high-speed data. There is no such thing as "free money." We're in this economic slump because of the incessant interference in the money supply through inflation, taxation and borrowing. Just because this "free money" is proposed to be spent on something you, and I, think would be "good" doesn't make it any less an interference, a malinvestment, which will at some point be liquidated just like flipped houses and dot-com boom "linux" companies without actual products. **BOB ROBERT**

INTEROP Planning Guide

LAS VEGAS, MANDALAY BAY
MAY 6-10 // EXPO: MAY 8-10, 2012

Mobility, cloud computing, security issues to dominate Interop

BY BRANDON BUTLER

CONTINUED ON PAGE 24

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IT Transformation:
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IT transformation is underway. Brocade CTO Dave Stevens explains this important shift and what it means to networks.

Can you describe the movement toward virtualizing the enterprise?
There is a major IT transformation underway, which is perhaps the biggest shift in the IT space that we've seen since the adoption of the Internet. It's driven by a number of external trends, such as the number of devices that are plugged into the network—by some estimates there will be more than 25 billion devices out there in the next few years. And at the other end of the connection, organizations are continuing to build big data centers as the cost of storage and processing capacity goes down and data center networks become more capable, higher performing, and less costly. Between those two end points you have to connect over the wide area; and over the years, those connections are becoming less expensive and massively more capable. So now you have an environment where enterprises are taking advantage of new infrastructures and leveraging the technology and applications needed to support an organization that is distributed over wide distances. Customers are going to use a combination of internal and external applications—the latter coming from cloud services, and they're combining those internal and external resources into a modern IT catalog that can support all users.

What are the characteristics of the virtual enterprise network?
The network needs to be able to run over distances, be more dynamic, and it must emphasize non-stop operations. If you have your entire organization based on applications that are running across the network infrastructure, there really isn't a good time to bring the network down for maintenance. Also, applications must be optimized to run on the network infrastructure. For example, with virtualization, the internal and external network must be optimized to support the movement of virtual machines inside and between data centers. These changes have to be made incrementally, so that customers don't have to throw out network investments they've made in the last 20 years. We need to use new technology and processes, but also leverage assets that exist today.

How are networks changing to support these new requirements?
Inside the data center there's a big transition going on with the adoption of modular applications, like virtualization, where the hierarchical structure of the traditional data center doesn't operate very well. So there's a movement in the industry toward faster, flatter networks inside the data center, such as Ethernet fabrics. In the broader carrier networks, infrastructure is being built to support the high growth in traffic patterns, so the network has to have much higher performance and lower cost to fit this new model. And at the enterprise network level, these networks must be designed to be very resilient, automated, and cheaper to operate.

What business benefits can companies expect to gain from virtualizing the enterprise?
There are many: greater productivity, faster time to market, faster implementation of new applications, lower costs, and the ability to create a strategic advantage over the competition by using an array of information that can only be gained by amalgamating information from both local and remote resources. The network is really the glue that ties all these services and computing infrastructures together. ■

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BROCADE

One of the premier technology shows of the year once again hits Las Vegas from May 6-10 and many of the themes IT leaders grapple with on a daily basis will be the hot topics at this year's forums and panel discussions. The show focuses on nine subject areas this year including: cloud computing, networking, wireless and mobility, virtualization, data center, storage, collaboration, information security and risk management, and IT management. Mobility is a dominant discussion point at this year's show, though, with 14 sessions on the topic.

Organizers of the show are expecting similar numbers this year to last year's 13,000 attendees and 350 exhibitors, says Interop General Manager Jennifer Jessup. Jessup, who is managing the show for the first time, says her goal is to connect attendees with some of the leading thinkers in technology today and provide a forum for IT professionals to engage with others about ongoing issues in the tech world.

There's a lot going on at Interop this year, so if you need any help deciding what to do among the dozens of speeches, conferences, panel discussions and keynotes, you've come to the right place. *Network World*'s guide to Interop will let you know the picks of the day, and other recommended sessions to attend.

SEE YOU THERE!

SUNDAY, MAY 6 AND MONDAY, MAY 7

ALISTAIR CROLL

8:30 A.M. TO 4:30 P.M., SUNDAY AND MONDAY

Enterprise Cloud Summit

Public cloud, private cloud, hybrid cloud, infrastructure as a service and platform as a service are all strategies for executing a cloud deployment. But which is right for your enterprise? As part of this two-day summit, IT leaders will learn about new strategies for implementing and managing different types of clouds. The first day will focus on cloud platforms, specifically IaaS and PaaS, while day two will be spent discussing private clouds and big data, including exploring tools such as Hadoop, Cassandra and Mongo.

ENTERPRISE CLOUD SUMMIT CHAIRMAN > ALISTAIR CROLL, founder and principal analyst, Bitcurrent **PRIVATE CLOUDS INSTRUCTOR > BARB GOLDWORM,** president and chief analyst, FOCUS **BIG DATA INSTRUCTOR > JEREMY EDBERG,** lead cloud reliability engineer, Netflix.

8:30 A.M. TO 4:30 P.M., SUNDAY AND MONDAY

Principles of Effective IT Management

Effective IT management means taking an IT idea for managing or fixing a problem and seeing it through to execution. In this two-day collaborative session, IT directors and managers will learn how to improve efficiency in the IT department, identify policy areas to focus on, and learn how to manage relationships with employees, managers and end users.

PRINCIPLES OF EFFECTIVE IT MANAGEMENT INSTRUCTOR > THOMAS RANDALL, operations vice president, BT Americas.

TUESDAY, MAY 8

PICK OF THE DAY

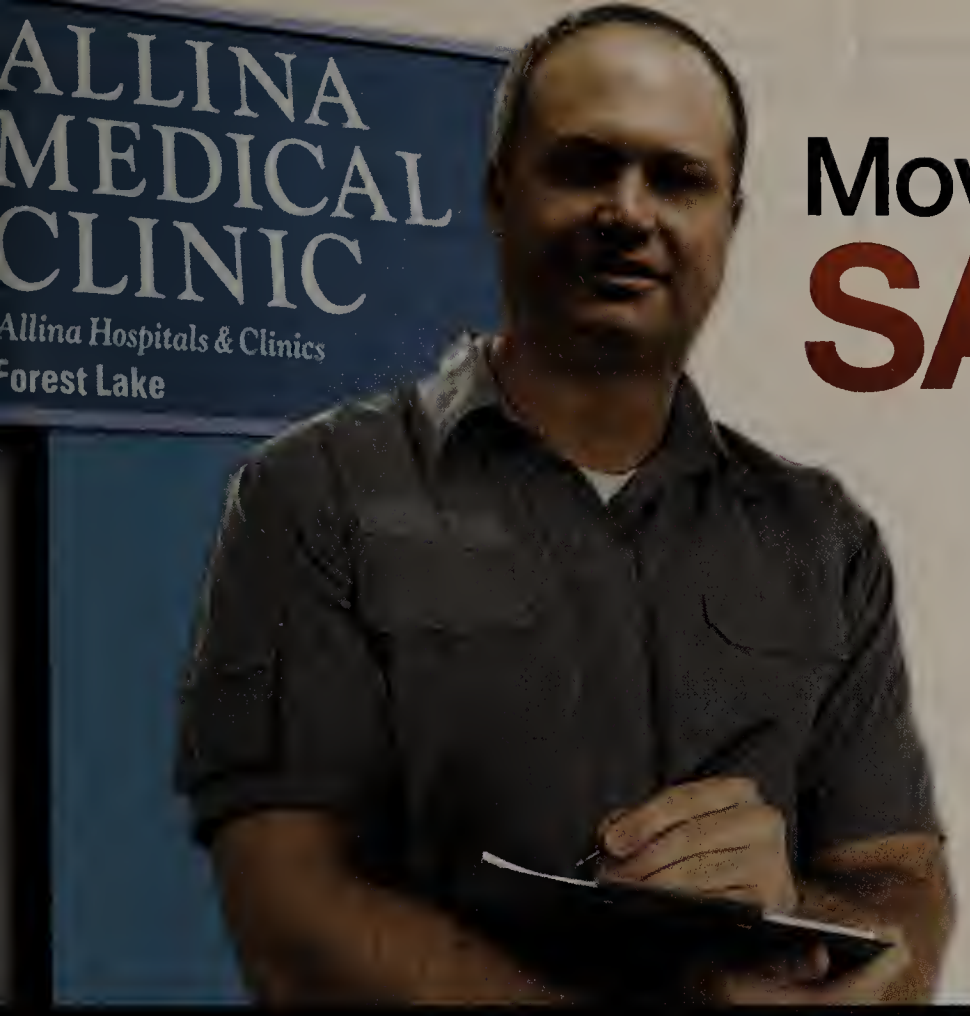
8 A.M. TUESDAY MORNING KEYNOTES FEATURING:

Padmasree Warrior

The general sessions of Interop kick off Tuesday morning with a power-packed trio of keynote speakers, headlined by Padmasree Warrior, CTO of Cisco, who will discuss how IT executives are dealing with three major macro industry trends — mobility, cloud and video — along with the top three business mega trends — business volatility, personalization, global transformation. Also on Tuesday morning, high-ranking officials from Zynga and Avaya will share their thoughts on the state of the technology industry.

KEYNOTE SPEAKERS > PADMASREE WARRIOR, CTO of Cisco; **ALLAN LEINWAND,** CTO for infrastructure, Zynga; **MARC RANDALL,** senior vice president and general manager of networking, Avaya.

PADMASREE WARRIOR



MovinCool SAVES Another OVERHEATING Data Room

Matt Steding, Allina Medical Clinic's Maintenance Manager, kept his data room cool in extreme weather with the MovinCool ceiling-mount CM25.

"The CM25 has all the features we need — plus an affordable price."

To read more about Matt's application story, visit: MovinCool.com/Allina

Scan to see the top 50 reasons why MovinCool products are the highest quality in the industry. MovinCool.com/50Reasons

When a "mission critical" data room became a "hot spot" after several upgrades, Matt Steding kept his cool. "The extreme weather puts an extra load on external compressors and condensers — which increases maintenance costs." Which is why he chose the more innovative, cost-effective solution: MovinCool's self-contained, ceiling-mounted CM25 air conditioner.

In addition to MovinCool's reputation for performance and reliability, Steding was impressed by the CM25's high sensible cooling capacity of 18,900 Btu/h, its seasonal energy efficiency ratio (SEER) of 14 and its compact dimensions. Sitting just 20 inches high, it easily fit into the ceiling space above the data room. "The CM25 has all the features we need — plus an affordable price." From mission critical computer room cooling applications to manufacturing process and people, MovinCool is the solution.

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10:15 A.M.

Data Centers: The Next 12-18 Months

With all the talk of virtualization, cloud computing, BYOD and security, enterprise executives still have to worry about their core infrastructure. Learn from a panel of experts about how the data center can and will change in the next year and a half.

PANELISTS > MIKE FRATTO, editor, *Network Computing*; **DAVE PETERS,** manager of system integration at Environmental Systems Research Institute; **KURT MARKO,** IT journalist, *Network Computing*; **JOHN BURKE,** principal research analyst, Nemertes Research.

11:30 A.M.

Securing Social Media in the Enterprise

What social media policy is appropriate for your business? Should access to social media be restricted? How can an enterprise be protected from threats posed by social media, such as malware or social media attacks? These questions and more are the topics of this discussion.

SPEAKER > NICHOLAS ARVANITIS, security consulting services, Dimension Data.

12:15 P.M.

Open Source & the Enterprise — Presented by Rackspace

There's been a lot of talk about open source vs. proprietary offerings recently, especially in the cloud space. How do enterprises know which way to go? In this panel discussion, hear from some of the leading backers of the OpenStack cloud movement.

SPEAKER > SOO CHOI, director of operations, Rackspace Cloud Builders.

1 P.M.

Afternoon keynotes

Hear from top officials at Google and Dell about technology trends impacting enterprises today.

KEYNOTE SPEAKERS > DARIO ZAMARIAN, vice president and general manager of networking, Dell; **JONATHAN ROCHELLE,** vice president, Google Enterprise; **BILL CHANG,** executive vice president of business group, Singapore Telecommunications Limited.

2:30 P.M.

Modern Two-Factor Authentication: Defending Against Today's User-Targeted Attacks

The bad guys are constantly coming up with new ways to penetrate IT infrastructures, so how are enterprises supposed to keep up to date with the latest in security features? One answer could be two-factor authentication, but even that comes with its costs and concerns. This panel will discuss the evolution of two-factor authentication and provide insight on the latest security measures today.

SPEAKER > DUG SONG, CEO, Duo Security.

3:45 P.M.

Completing the Mobile Vision: Mobile Unified Communications

Mobile is the wave of the future, but creating a unified communications platform is easier said than done. In this session, learn how unifying landlines, cellular, Wi-Fi and voicemail into a single managed services can help control costs and create a competitive advantage.

PANELISTS > ZEUS KERRAVALA, ZK Research; **JOHN ROESE,** Huawei

Technologies; **DAVID GINSBURG**, Extreme Networks; **MICHAEL SMITH**, Cisco.

8 P.M.

After Hours Tweet-Up

Still haven't had enough after the first full day of general conferences? Monitor Twitter throughout the day for the #Interop hashtag, which will announce where the after Hours Tweet-Up will be taking place.

WEDNESDAY, MAY 9

8:30 A.M.

Wednesday morning keynote

Join a jam-packed 90-minute morning keynote, which will include insights from VMware CTO and Senior Vice President of R&D Steve Herrod, as well as a panel discussion featuring some of the top cloud vendors, including Rackspace and Terremark. Plus, hear a case study by DreamWorks Animation of how the firm has leveraged the HP cloud.

KEYNOTE SPEAKERS > STEVE HERROD, CTO and senior vice president of R&D, VMware; **DEREK CHAN**, head of global technology operations, DreamWorks Animation; **BETHANY MAYER,** senior vice president and general manager of HP Networking. **KEYNOTE PANELISTS > ALISTAIR CROLL,** founder, Bitcurrent; **STEVEN SHALITA,** vice president of marketing, NetScout Systems; **JOHN ENGATES,** CTO of Rackspace; **ELLEN RUBIN,** vice president of cloud products, Terremark.

10:15 A.M.

Enabling Endpoints for Collaboration: Hardphones, Softphones, Mobiles

Who should get what device? What should your BYOD strategy be, and how will you support it? Enterprises will feature a mix of communications devices into the future, and this session will offer insights on how to manage it all.
PANELISTS > ROBIN GAREISS, executive vice president and founder, Nemertes Research; **PEJMAN ROSHAN,** vice president of mobility, ShoreTel; **JACK JACHNER,** vice president of business development for OpenTouch, Alcatel-Lucent.

11:30 A.M.

The Future of the 'Desktop' or the 'Desktop' of the Future

With the proliferation of mobile computing, users want access to their desktops even when they're not at their desk. This panel will discuss what the future holds for the desktop and how technologies such as thin or zero clients, hypervisors, virtual desktops and cloud services can be implemented, plus what infrastructure is needed to support them.
PANELISTS > BARB GOLDWORM, president and chief analyst, FOCUS; **GLENN WILSON,** product management, Google; **JOHN BURKE,** principal research analyst, Nemertes Research; **PHIL MONTGOMERY,** senior director of desktop product management, VMware.

2 P.M.

Do you know your enemy? Incorporating Security Intelligence and Adversary Centric Analysis into Information Risk Management

One important aspect of developing a security strategy is knowing who is attacking you and what they're capable

of. This session will run through the skill sets of various attacking methods and tools to help prevent them.

SPEAKER > JOSH CORMAN, director of threat intelligence, Akamai.

PICK OF THE DAY

2 P.M.

OpenFlow and Software Defined Networks: What are they and why do you care?

OpenFlow and SDNs are a new approach to network design, but are they right for your enterprise? Learn about what OpenFlow and SDNs are and what problems they solve.

PANELISTS > JIM METZLER, vice president, Ashton Metzler & Associates; **RAKESH SAHA,** director of product management, IBM; **MATTHEW DAVY,** chief network architect, InCNTRE; **ISABELLE GUIS,** vice president of marketing, Big Switch Networks.

3:15 P.M.

Big Data? No. Big Decisions Are What You Want

Big data is one thing; getting actionable information from that data is another. This session will run through what big data is, how it should be archived for retrieval and how it can be used to drive important decisions.

SPEAKER > STUART MINIMAN, senior analyst, Wikibon.

THURSDAY, MAY 10

9 A.M.

Integrating Social Software into Contact Centers and Elsewhere in Enterprise Communities

Social media networks such as Facebook and Twitter can create valuable direct connections between customers and the contact center. In this session, a panel of experts will discuss how this can be done effectively and be integrated into current operations.

PANELISTS > SHEILA MCGEE-SMITH, president, McGee-Smith Analytics; **MICHAEL SMITH,** director of market management collaboration applications, Cisco; **LAURA BASSETT,** director of marketing, emerging products and technology, Avaya; **LISA ABBOTT,** senior product marketing manager for social media and e-services, Genesys.

10:15 A.M.

Security Automation: Connecting Your Silos

Security strategies for some enterprises in the past have involved multiple unique technologies protecting various aspects of the network. But, standards-based signaling can instead create an automated, intelligent network security infrastructure that incorporates components of previous systems. Learn how it works in this session.

SPEAKER > LISA LORENZIN, principal solution architect, security and mobility, Juniper Networks.

11:30 A.M.

Do Mobile Operating Systems Still Matter?

This session will examine the real differences between the various mobile operating systems and what impact they have on enterprise IT.

PANELISTS > MICHAEL BRANDENBURG, industry analyst, Frost & Sullivan; **ANDREW BRAUNBERG,** research director, Current Analysis; **CHRISTIAN KANE,** analyst, Forrester Research; **ADAM BLUM,** CEO, Rhomobile.

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"Strategies for Managing Distributed IT Environments"
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Time: 12:15 p.m. – 1:00 p.m.
Room: Mandalay Bay J

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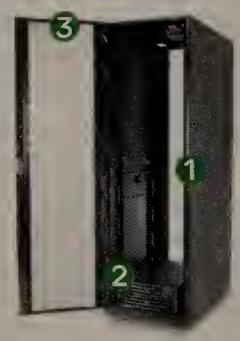

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CLEAR CHOICE TEST: NEXT-GENERATION FIREWALLS (PART 1)

Fast-forwarding firewall faceoff

SonicWall comes out on top in performance tests, but trade-offs remain

BY DAVID NEWMAN

Next-generation firewalls claim to identify application-layer attacks and enforce application-specific policies while delivering top-notch performance, even with advanced security features turned on.

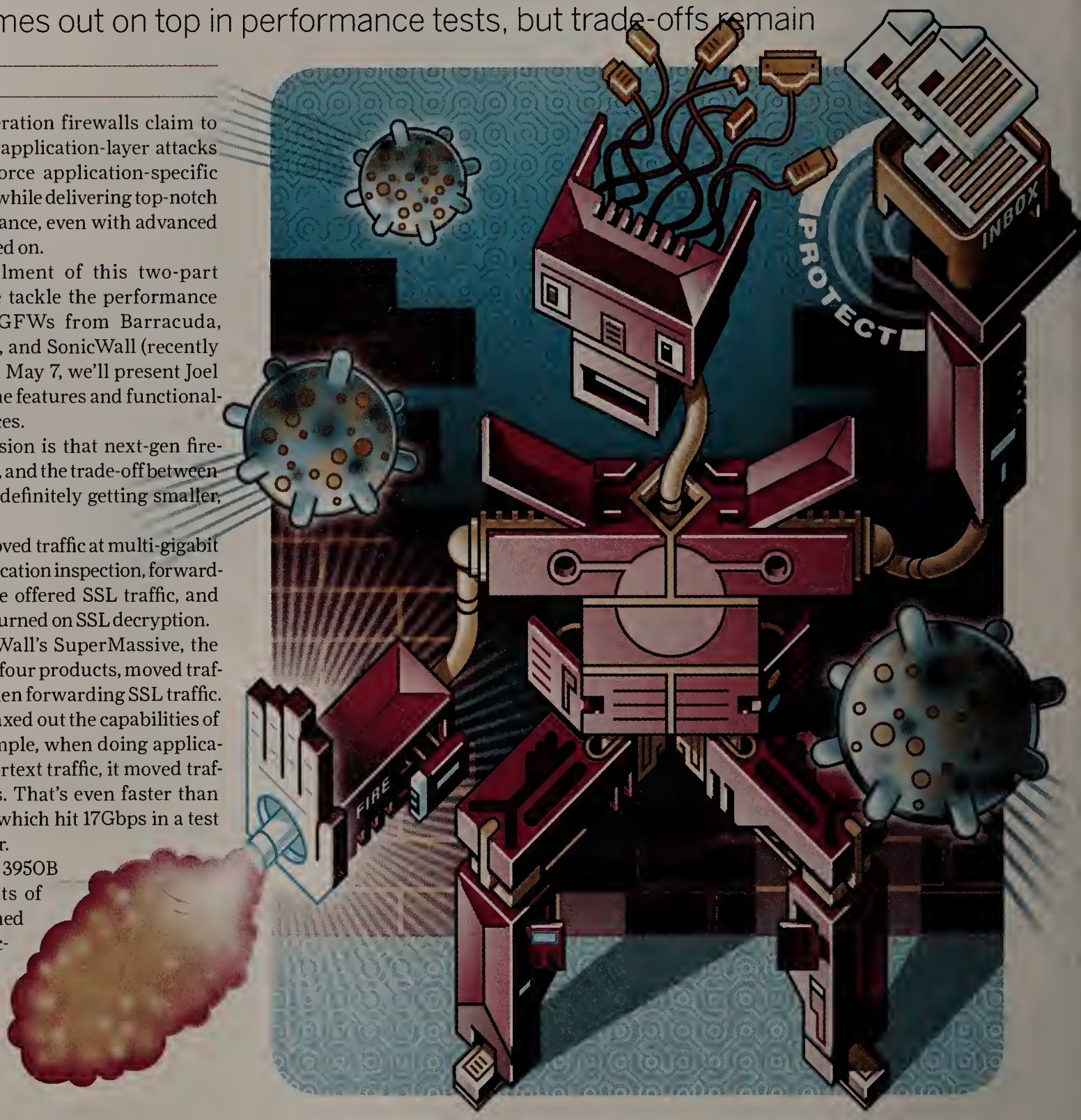
In the first installment of this two-part Clear Choice test, we tackle the performance issue, evaluating NGFWs from Barracuda, Check Point, Fortinet, and SonicWall (recently acquired by Dell). On May 7, we'll present Joel Snyder's analysis of the features and functionality of these same devices.

Our overall conclusion is that next-gen firewalls are getting faster, and the trade-off between speed and security is definitely getting smaller, but it's still there.

While all devices moved traffic at multi-gigabit rates while doing application inspection, forwarding rates fell when we offered SSL traffic, and plummeted when we turned on SSL decryption.

In our tests, SonicWall's SuperMassive, the most expensive of the four products, moved traffic the fastest, even when forwarding SSL traffic. In multiple cases it maxed out the capabilities of our test bed. For example, when doing application inspection of cleartext traffic, it moved traffic at or near 20Gbps. That's even faster than Palo Alto's PA-5060, which hit 17Gbps in a test we conducted last year.

Fortinet's FortiGate 3950B also pushed the limits of our test bed and finished a close second to SonicWall in tests involving cleartext traffic. It also handled slightly more TCP connections than the SonicWall device.



NETRESULTS

Product	NG Firewall F900	Check Point 12610	FortiGate 3950B	SuperMassive E10800
Company	Barracuda Networks	Check Point Software	Fortinet	SonicWall
Cost	Base unit, $32,999; 8-port Gigabit copper module, $1,649; 2-port 10G Ethernet SFP+ module, $4,699	12610 appliance, $65,000; management appliance, $25,000	Base unit, $79,995; additional 2-port 10G module, $23,995	Base unit, $198,000; with IPS, anti-malware and application control, $261,400
Pros	Application inspection at up to 12Gbps	Highest SSL decryption rates	High transfer rates for Web traffic; highest TCP connection capacity	Fastest performer overall; highly scalable as user count grows
Cons	High cost to enabling IPS and UTM; lower TCP scalability than others	UTM features exact a performance cost	Significantly slower with SSL traffic	Most expensive system tested

There was no performance slowdown with either the SonicWall or Fortinet devices when IPS and unified threat management (UTM) were turned on. Conversely, turning on IPS and UTM in the Barracuda and Check Point systems carried a heavy performance cost.

Check Point ran away with our toughest test. The Check Point 12610 proved by far the fastest at SSL decryption across all device configurations and was the only system to break the 1Gbps barrier (the SonicWall device ran faster, but only when we changed our test configuration to offer more flows).

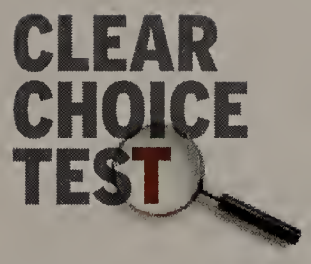
Barracuda, the lowest-cost device in our test, delivered a solid 12Gbps when we measured cleartext throughput using mixed content types.

Mixed-content loads

We measured forwarding rates for mixed and static-length HTTP and SSL content; rates with SSL decryption enabled; and TCP scalability. We put the greatest emphasis on the mixed HTTP tests, because they most closely approximate the loads handled by firewalls in enterprise networks.

A key goal was to compare results with those of the Palo Alto PA-5060, which we evaluated in 2011 using the same methodology.

The mixed-content tests involved a variety of object sizes, like enterprise traffic, ranging from 1KB to 1.536MB, and a variety of content types, including .jpeg images, PDF documents, binary files and text objects.



We set up the Spirent Avalanche traffic generator to offer this mixed-content load to each NGFW in three different modes: as a firewall only; as a firewall and IPS; and as a UTM device with all functions enabled (firewall, IPS, antispyware, and antivirus [anti-bot in Check Point's case]). For all three modes, we offered both cleartext Web and SSL traffic. We also ran separate tests involving decrypted SSL traffic, to be discussed later.

These NGFWs always had application inspection enabled. The ability to classify traffic and make forwarding decisions at the application layer is what distinguishes NGFWs from previous-generation firewalls, IPSs and other security devices.

NGFWs generally run fastest when they function as straight firewalls handling unencrypted traffic (see graphic below). In terms of combined forwarding rate (adding incoming and outgoing traffic rates), SonicWall's SuperMassive was fastest, followed closely by Fortinet's FortiGate 3950B. Both products moved cleartext traffic at or near 20Gbps, the highest rate possible in one direction on our test bed. (All systems had four 10G Ethernet interfaces, with servers on one side and clients on the other.)

Both the SonicWall and Fortinet devices came close to maxing out the test bed's network capacity not only in the firewall-only tests but also when configured with IPS and antivirus/anti-spyware features enabled.

These numbers also compare favorably with the ones posted last year by Palo Alto's PA-5060, which topped out at around 17Gbps as a firewall, but fell to 5.3Gbps in IPS mode and IPS plus UTM modes.

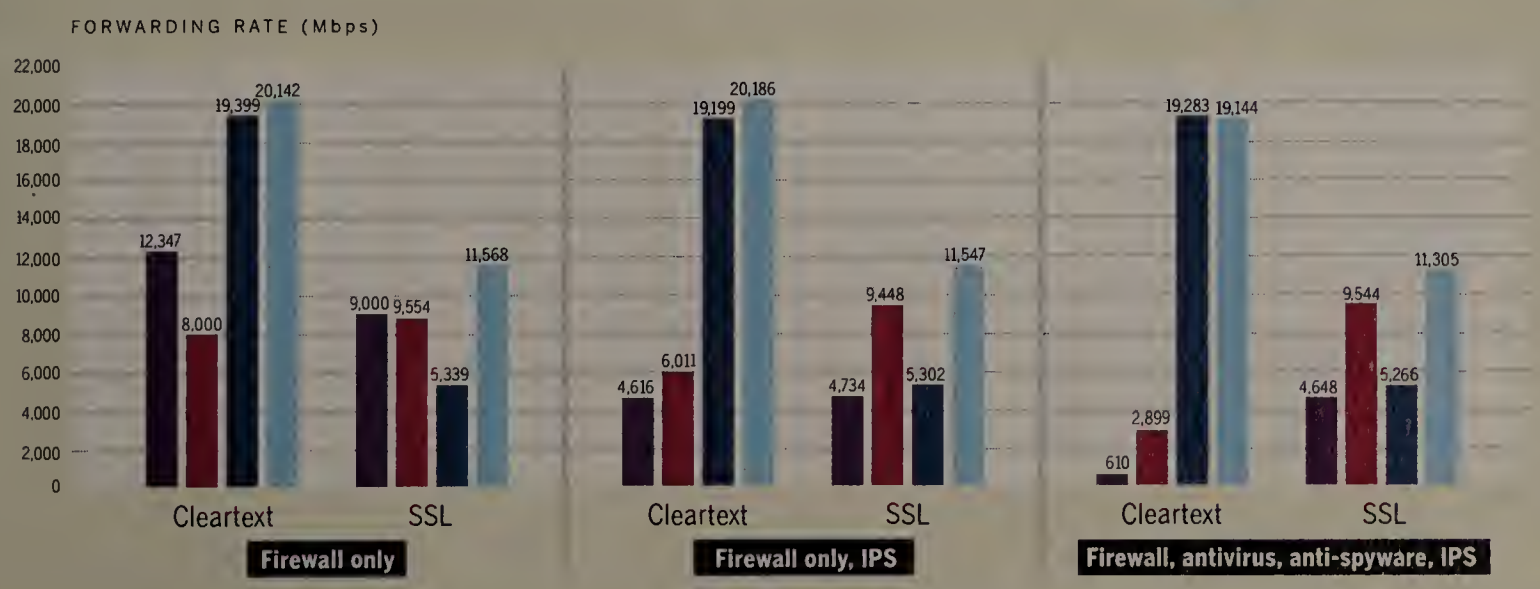
SSL rates were generally lower than those for cleartext traffic. This isn't surprising given that even without decryption, an application inspection engine may work harder to identify the seemingly random patterns in an SSL stream.

However, there were some exceptions: Check Point's 12610 moved SSL traffic faster than straight HTTP, and in one case so did Barracuda's NG Firewall F900. The most likely explanation is that once the devices identified traffic as SSL, they stopped any further attempts at traffic classification.

One configuration gotcha surprised at least two vendors' test engineers: When the Check Point and Fortinet systems had both SSL firewall rules and application inspection enabled, the inspection logic kicked in twice, causing

Mixed-HTTP Content Handling

The SonicWall and Fortinet devices maxed out the 20Gbps limit of our test bed with cleartext (unencrypted) Web traffic, but all devices moved SSL traffic at lower rates. And enabling IPS and UTM features caused further slowdowns for the Barracuda and Check Point devices when handling cleartext Web traffic.



SSL rates to be around half what each vendor expected to see.

The Check Point and Fortinet results were obtained without a specific SSL firewall rule, since the application inspection feature can identify SSL traffic and block or forward it as necessary. If this configuration issue can trip up firewall vendors' own engineers, it's definitely something for enterprise network managers to look out for.

Moving across the different configurations, the Barracuda firewall's forwarding rates dropped sharply when we enabled IPS and then all UTM features. Check Point's 12610 also moved cleartext traffic more slowly with antivirus and anti-bot features enabled; its SSL performance was about the same in all three configurations, again suggesting the device stopped inspection upon identifying a flow as SSL.

Static object tests

Tests of static 100KB and 512KB objects produced results similar to those involving mixed content. Devices generally moved static objects far faster over HTTP than SSL (see graphic below).

The Fortinet and SonicWall firewalls again moved cleartext HTTP objects at or near the network limits of our test. SonicWall's SuperMassive also came close to maxing out the SSL capabilities of our test bed. With no DUT in place, the Avalanche traffic generators moved 100KB and 512KB objects over SSL at 17.1Gbps and 14.4Gbps, respectively. The SuperMassive moved SSL traffic near those rates, regardless of configuration. The performance degradation was more noticeable for Fortinet's FortiGate 3950B.

Also, as in the mixed-object tests, both the Fortinet and SonicWall devices moved traffic faster than Palo Alto's PA-5060 did in last year's tests. As a straight firewall, the PA-5060's top speed was 18.7Gbps with 512KB objects. That rate fell to 6.1Gbps in IPS mode and 6.3Gbps in UTM mode.

Conversely, the Barracuda and Check Point firewalls generally moved SSL traffic faster than plain HTTP, in one case — for Check Point — more than three times faster. Once again, both devices probably stopped inspecting traffic after classifying it as SSL.

When IPS or UTM modes were turned on, both the Barracuda and Check Point firewalls slowed down, but the Fortinet and SonicWall devices moved traffic at roughly the same rate regardless of device configuration.

SSL decryption

SSL traffic poses a dual problem for NGFWs: If traffic is encrypted, applications cannot be inspected, but if traffic is decrypted there may be a very high performance cost. In fact, the SSL decryption tests turned out to be the biggest differentiator in this comparison, and for SonicWall the most controversial issue.

When doing SSL decryption, a firewall acts as a proxy, intercepting client requests and replacing the server's certificate with its own. Since users seldom inspect the replaced "server" certificate, they think they're dealing directly with the origin server. The firewall, meanwhile, decrypts and inspects traffic contents.

Barracuda's current software works as a non-transparent proxy, requiring reconfiguration of all client browsers for decryption to work. Barracuda says a forthcoming software release will support transparent proxying. The other three devices all functioned as transparent proxies.

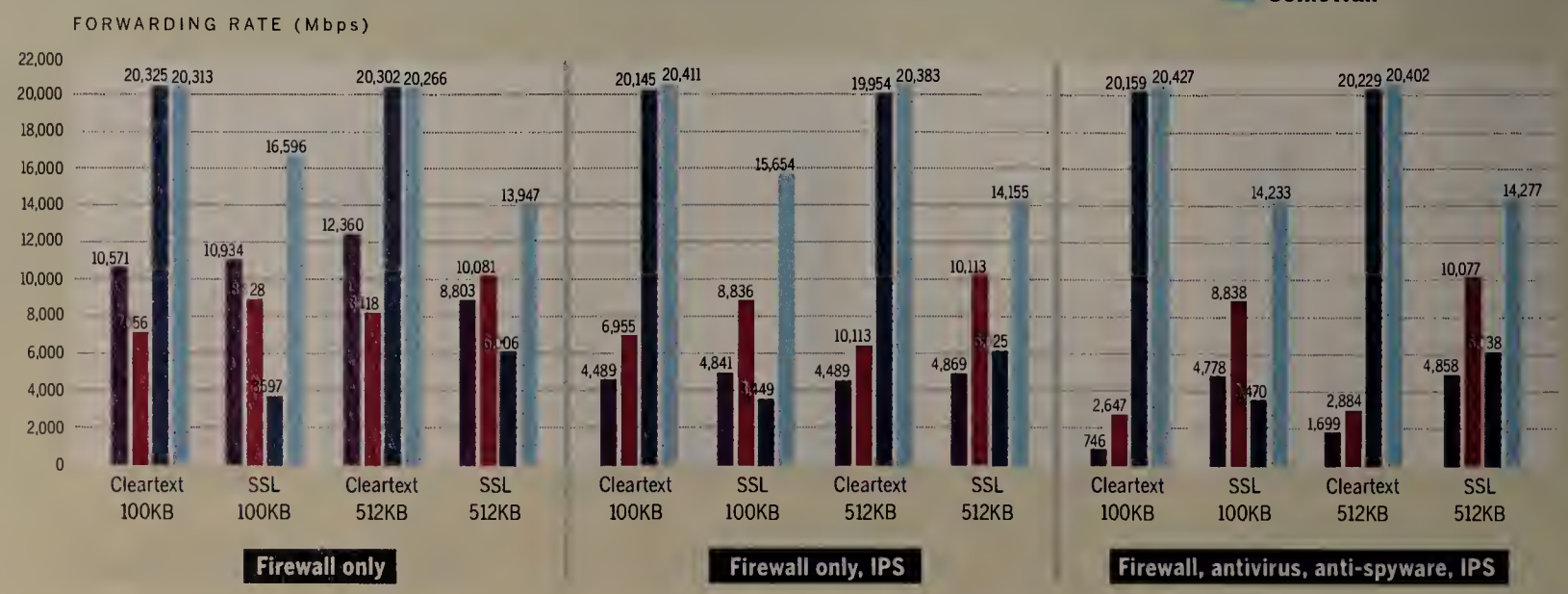
Also, the Barracuda and Fortinet devices only perform SSL decryption when antivirus inspection is enabled. The results given here reflect that; even though our methodology called for decryption in firewall-only and firewall-plus-UTM modes, the firewall-only numbers for Barracuda and Fortinet were obtained with antivirus inspection enabled.

Check Point's 12610 proved by far the fastest at SSL decryption across all device configurations. It also was the only system tested to break the 1Gbps barrier (see graphic, page 34).

Neither the Fortinet nor SonicWall devices decrypted SSL traffic at rates anywhere close to their rates without SSL decryption. Decryption rates for Fortinet's FortiGate 3950B ranged between 191Mbps and 472Mbps, far slower than its 3.6Gbps to 6.0Gbps range of

Static HTTP Content Handling

Static object tests also showed big differences in performance. The SonicWall and Fortinet devices again maxed out the test bed in most cases, though both went slower with SSL traffic (much slower in Fortinet's case). IPS and UTM features degraded performance for the Barracuda and Check Point devices.



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rates without decryption.

Decryption rates fell even more precipitously for SonicWall's SuperMassive, but the vendor disputed our methodology. In our tests, the SuperMassive moved SSL traffic at 11.3Gbps without decryption, even with UTM features enabled; with decryption, the same load moved at just 83Mbps, slower than the 108Mbps low-water mark seen in the previous Palo Alto PA-5060 test. The rates were slower still, down to 49Mbps, with static 100KB objects, compared with 626Mbps for the PA-5060 in last year's test.

SonicWall says the SuperMassive can decrypt traffic at far higher rates, provided it's pushed harder. The vendor noted that its device's CPU utilization during these tests was only around 2%, suggesting it was capable of doing around 50 times more work.

To put that assertion to the test, we conducted one-off tests with 50 times more flows, and found that SuperMassive decrypted traffic at rates of up to 4.8Gbps (see "Scaling up with SonicWall's SuperMassive" at tinyurl.com/c4mem5b). We also tried the same large-flow-count tests with the other firewalls, but none could operate at this level without some failed transactions.

Even though the results show a big performance hit for all devices with SSL decryption, things actually could be much worse. We used the relatively weak RC4-MD5 cipher in these tests. While that's the cipher in use at many e-commerce sites, most banks and other financial institutions use much stronger ciphers, such as AES256-SHA1, that are far more compute-intensive and presumably would result in still lower forwarding rates.

TCP scalability

The final set of tests examined TCP scalability in two ways: in terms of capacity (the maximum number of concurrent connections each device could sustain without time-outs or other failures) and rate (the maximum speed at which each device could set up and tear down new connections, again with zero failures).

In the connection capacity tests, we configured Spirent Avalanche to build up successively larger connection counts by having each existing connection make one new HTTP request every 60 seconds. Fortinet's FortiGate 3950B took top honors here, handling more than 10 million connections. SonicWall's SuperMassive was close behind, successfully fielding 9.9 million connections. The Check Point and Barracuda systems handled far fewer concurrent connections, at 900,000 and 320,000, respectively.

To measure connection setup rate, we configured Spirent Avalanche to use the older HTTP 1.0 specification, which requires a new TCP connection for each new transaction. SonicWall's SuperMassive was the clear leader, setting up 290,000 connections per second (cps). Check Point's firewall was next, setting up 57,039 cps, while the Barracuda and Fortinet firewalls set up connections at 47,043 and 42,911 cps, respectively. The SuperMassive's highly parallelized architecture (using 96 CPU cores) clearly favors a test like this.

We concluded last year's review of the Palo Alto PA-5060 saying there's room for improvement when it comes to NGFW performance. The vendors in this review have taken note: Forwarding rates are generally higher, as is TCP scalability. Further, some devices decrypt SSL traffic far faster than in previous tests. While there's still a security/performance trade-off — a big one — when decrypting SSL traffic, it's clear there are now more choices for high-speed application inspection and control. ■

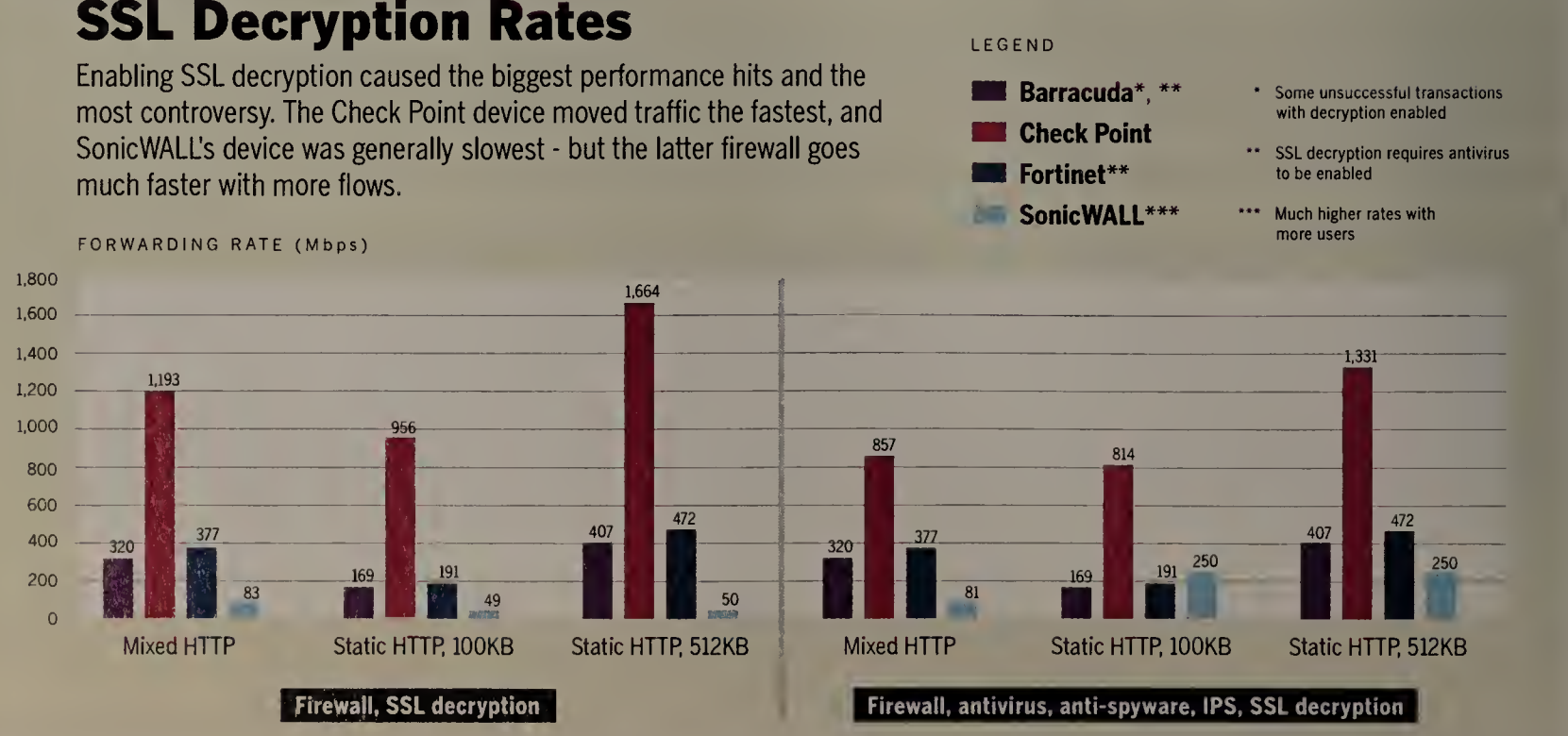
Newman is a member of the Network World Lab Alliance and president of Network Test, an independent test lab and engineering services consultancy. He can be reached at dnewman@networktest.com.

THANKS

Network World gratefully acknowledges the assistance of Spirent Communications, which supplied its Spirent Avalanche 3100 GT traffic appliances for this project. Spirent's Michelle Rhines, Jeff Brown and Paul Downs also provided engineering support. Thanks also to Arista Networks for supplying its 7124S 10G top-of-rack switch that tied together all systems on the test bed.

SSL Decryption Rates

Enabling SSL decryption caused the biggest performance hits and the most controversy. The Check Point device moved traffic the fastest, and SonicWALL's device was generally slowest - but the latter firewall goes much faster with more flows.



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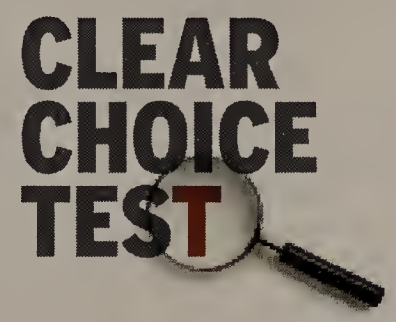
Windows Server | Microsoft System Center

Quick fix for PHP apps on Windows

Open source tool brings Apache, MySQL and PHP to Windows Web servers

BY SUSAN PERSCHKE



While many popular website applications (WordPress, Drupal, Joomla, etc.) are open source and therefore freely available, running these PHP-based apps on a Windows IIS Web server requires a bit of retrofitting.

Although Microsoft has streamlined the process of installing and configuring the PHP scripting language on IIS 7.0, many Web administrators consider the fix, which involves enabling FastCGI extensions, too risky for production environments. Others simply wish to set up an independent test environment for evaluating open source apps.

Moreover, PHP extensions are not the only hurdle for Windows webmasters. A large number of PHP-based open source apps rely on backend databases (MySQL, MariaDB, PostgreSQL, etc.) that also need special handling to run on Windows.

Enter WampServer, an open source product that installs a PHP-apps-ready platform consisting of Apache Web server, MySQL database and PHP, plus several helpful GUI-based utilities. WampServer can be installed on virtually any version of Windows, either desktop or server. With an active user community, industrial-grade training programs and a large installed base, WampServer is one of the world's most popular Apache-MySQL-PHP distributions.

We evaluated WampServer, a product of the French company Alter Way, for its Windows-friendly features and its "out-of-the-box" readiness for hosting PHP apps. We tested WampServer with Drupal and WordPress. Both products were up and running on our 32- and 64-bit test servers less than five minutes after WampServer was installed.

A Windows Web admin's first instinct may be to install WampServer on a trusty IIS Web server. This is not advisable, especially for a first-time installation. You may encounter port conflicts or other configuration problems that could thwart your efforts to get WampServer up and running smoothly.

For the 32-bit installation, we installed WampServer on a machine running a fresh install of Windows Server 2008 with Service Pack 2 (patched), with no server roles and no Web services running. You can also test on a virtual machine. The latest version of WampServer is compatible with Windows 7 and Windows Server 2008. Previously released versions can operate on older Windows platforms going all the way back to Windows NT.

The WampServer installation on both our 32- and 64-bit Windows servers was surprisingly straightforward with just a few prompts from the Windows executable file we downloaded from WampServer.com (there are separate files for 32- and 64-bit architectures).

First, to make it easier to clearly identify and work with the newly installed WampServer files, we selected an empty, newly formatted NTFS extended partition and an empty "wamp" folder as the destination for the install.

Next the WampServer installer prompted for a choice of a website browser. It defaulted to Internet Explorer, and we accepted the default, although we also later installed and tested WampServer with Google's Chrome browser.

That's all there was to the initial installation.

At the conclusion of the installation, WampServer started up without incident, as evidenced by a new icon in the Windows system tray that initially changes color from red to orange to green, with green indicating that the Apache Web server is running and listening for incoming HTTP requests. (If the icon stays orange, or red, this indicates that there was a problem starting the Apache Web service.)

WampServer installs an unobtrusive GUI services and utilities manager that can be easily accessed by single-clicking the tray icon.

WampServer listens on Port 80 by default. To confirm this, and to make sure there were no conflicts, we ran the utility "Test Port 80" from the utility Apache | Service menu.

The results were displayed in a command prompt window.

Once we confirmed that WampServer was running and listening on Port 80, we attempted to view the homepage at http://localhost. On our first attempt, we received a 403: Access Denied/Forbidden error. What we initially thought was a permissions error, turned out to be a minor DNS problem. By default WampServer listens on all interfaces on Port 80. Since our Windows 2008 server was not configured for the DNS role, we needed to give WampServer a little help to determine where the "localhost" was pointed. We replaced "LISTEN 80" with "LISTEN 127.0.0.1:80" in the Apache httpd.conf file, which is the master configuration file used by Apache Web server. After making this minor tweak to the httpd.conf file, we were able to view the WampServer "localhost" homepage in IE (for security reasons, remote Web access is not enabled in the initial installation).

Although it appeared we had successfully installed WampServer, we wanted to test its suitability for hosting PHP apps that use MySQL as the backend database. We chose Drupal and WordPress as the test candidates. Both packages have installers that automate most of the installation process. However, both apps also require a MySQL database as a starting point. We utilized the Web interface PHPMyAdmin to set up the initial databases. PHPMyAdmin is a Web utility for MySQL that can be accessed from the homepage or by navigating directly to http://localhost/phpmyadmin.

Important security note

One thing to keep in mind: By default, MySQL is installed with the super admin account "root" enabled, but not password-protected.

As the default MySQL install is a very vulnerable configuration, our first instinct was to secure it immediately. However, we soon discovered that this caused problems with our subsequent PHP product installs, especially Drupal, so we left security "as is" for the initial install of our PHP apps (we locked it down afterward).

To install Drupal, we created a new MySQL database named "drupal" and did nothing further in MySQL. We then copied our downloaded Drupal files into d:\wamp\www\drupal, which made Drupal a subdirectory off the WampServer websites root (equivalent to inetpub in IIS). We then launched the Drupal installer in an IE browser window (http://localhost/drupal/install.php).

The Drupal installer proceeded through a series of Web pages designed to act like a wizard. When prompted for the database info we entered the database name we created earlier, "drupal," and "root" for the user account with no password. The Drupal installer set up the database automatically from there, prompting for a few additional configuration parameters. We selected "localhost" as the name of our test site. The result was a basic, working Drupal installation that was operational less than two minutes after launching the installer.

We decided to proceed to the next install, which was WordPress. Once again, we created a MySQL database named "wordpress" and did nothing further in MySQL (no tables, users, or permissions). We copied the WordPress installation files into d:\wamp\www\wordpress and opened the installer in IE (http://localhost/wordpress/). The installer proceeded in a similar manner to Drupal, with prompts for the MySQL database name and various other initial setup parameters such as the WordPress admin account. Again, the install proceeded flawlessly and we had a working WordPress site running in just a few moments.

Although both products were installed and operational in very little time, we hasten to differentiate our (insecure) bare-bones test environment from a production-ready environment. Under no circumstances would you want to "launch" these products on a live server unless you first secure and configure the Web server, the MySQL root account and each individual user account/database/application.

Also, by default WampServer is accessible on the local server only, so you would also need to specifically configure it for external access. In a production environment you would need to add or configure additional IP addresses on the network interface, set up virtual directories, and probably configure WampServer as a service (this can be done from the WampServer GUI utility launched from the tray icon).

Most, if not all, of the security and configuration parameters needed to launch a production-ready version of WampServer and its hosted apps are found in the documentation readily available online from the vendor for each product, e.g., The Apache Software Foundation (Apache Web Server), MySQL, PHP, Alter Way (WampServer), Drupal and WordPress.

Overall we were quite impressed by the Windows-friendliness and usability of the WampServer product. By running PHP apps exclusively on WampServer, we escaped the task of configuring PHP extensions for IIS. In fact, IIS wasn't even installed on either of our Windows Server 2008 test machines. ■

Five Things We Like about WampServer

1. **Quick** and **easy** installation on Windows.
2. **User-friendly, unobtrusive GUI** for managing WampServer services and providing direct access to other Wamp components (Apache Server, MySQL and PHP).
3. **Functional, preconfigured Web interface** ("localhost" home page) for launching apps and managing MySQL databases.
4. **Good online vendor support** and active forums.
5. **Large, active installed base of users**, with available fee-based training courses.

Five Things We'd Change about WampServer

1. **The 403 errors** when trying to access http://localhost for the first time were annoying, and these happened on both the 32-bit and 64-bit installs. To correct this, we'd recommend either shipping WampServer with 127.0.0.1 pre-configured or at least notify users at the end of the installation process that they may need to make a configuration change to the httpd.conf file in order to view the "localhost" homepage.
2. To **make the homepage more user friendly,** switch the order of items displayed. New users are probably more interested in navigating to PHPMyAdmin for their newly installed projects than viewing for the umpteenth time a long list of installed modules.
3. Add post-install screen to **inform users about the default configuration:** local server only with no remote Web access. Inform users if a conflict is detected on Port 80.
4. Add post-install screen to **inform users that WampServer does not auto-configure** as a Windows service that keeps running when the user logs off or starts up automatically if the machine is rebooted.
5. **Update WampServer** to use the latest, performance-enhanced version of Apache Web Server 2.4.1.

Perschke has extensive experience as a Web/database developer and network security manager in her role as CSO for Arc Seven Technology. She is also an experienced technical writer, and has written numerous white papers for a number of different organizations, including Fortune 500 companies. Susan can be reached at susan@arcseven.com.

NETWORKWORLD

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BACKSPIN | BY MARK GIBBS

The gov't wants to know what it doesn't know

"There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know." — Donald Rumsfeld

The problem with the U.S. government not knowing what it wants to know, as well as worrying that it doesn't know enough to know what it doesn't know, is that said government has the power to try to find out. And when I write "power" I mean resources and motivation that make our government effectively unstoppable.

In 2005 *The New York Times* exposed the Bush administration's secret authorization in 2002 that allowed the National Security Agency (NSA) to eavesdrop on communications within the U.S. (prior to this, the NSA was restricted to intercepting overseas communications).

Despite a huge public outcry and legal action started by the ACLU and the EFF, rather than stopping or even slowing the warrantless wiretapping program, the NSA has expanded and accelerated enormously. If you should doubt the seriousness of these intelligence gathering projects, consider the NSA's new Utah Data Center.

With a $2 billion budget, 1 million square feet of data center, and a claimed storage capacity of a yottabyte, the Utah Data Center will be pushing the envelope of Big Data.

In case you're wondering what a yottabyte might be, a recent *Wired* article about the Utah Data Center explained, "A yottabyte is a septillion bytes — so large that no one has yet coined a term for the next higher magnitude." If a septillion doesn't help, consider that a yottabyte equals 10 followed by 24 zeros worth of bytes.

To give that figure a bit more perspective, it has been estimated by Cisco that by 2015 the Internet will generate something around 966 exabytes (something less than a zettabyte, or 10 to the 21) of data annually. The Utah Data Center will be able to store 1,000 times that volume! And to analyze it and crack encrypted content they have computers that, it is claimed, are capable of exaflop (10 to the 18 floating point operations per second) performance.

This power and capacity combined with the ever-expanding surveillance network means that pretty much everything you write, everywhere you go online, every YouTube video you watch, every Facebook post you make, every cellphone call you make or receive (including from where and to whom and where the recipient is), every text you send and receive, every public place you walk through ... it will all be captured, stored, analyzed, categorized and filed.

What you should be worried about is — and I know I've said it before but it bears repeating — mission creep, the inevitable overreach by the government when it has control of massive and highly detailed data. Just consider how law enforcement, with the complicity of the cell service providers, has abused cellphone tracking.

I'd put money on a future government initiative that will require access into corporate networks to provide deeper monitoring than can be done externally. Hell, that might already be underway! It might and how would you know if it was? It would be something you don't know you don't know. ■

Gibbs doesn't know in Ventura, Calif. If you do, let him know at backspin@gibbs.com and follow him on Twitter (@quistuipater).

NETBUZZ | BY PAUL MCNAMARA

How to brag online without appearing to brag

LAST WEEK I posted to Buzzblog a list of the 50 best "bragging rights" claimed by users of Google+.

Who says they're the 50 best? Only me. And while they're skewed toward those in my Google+ circles (a lot of techies and media types) and those in theirs (civilians, with a couple of celebs), I compiled this list over the course of a few months by looking at many hundreds of Google+ profiles, which in addition to containing standard biographical info invite users to claim "bragging rights."

Most people pass — it's not required — and too many take the invitation far too seriously. But among those who exercise more imagination, restraint and self-deprecation — in other words, those who get it — you will find interesting and amusing tidbits. Here's a sampling of the techier ones (and the entire list can be found at http://tinyurl.com/cgodzfo).

"I proposed to my wife using obfuscated Perl code," boasts Colin McMillen, a software engineer who actually works at Google.

"I have an amazing Ubuntu Tattoo!" says Benjamin Kerensa, an Ubuntu team leader.

"I understand all the xkcd jokes," notes Peter Schmidt, COO of Linear Air.

"Aware that passing in front of the television should be performed swiftly and timed for the least disruption to the game or gamers," says Dana Geppi Long, a SQL Sever DBA.

"Started using Google+ while I was living in space," brags Ron Garan, a NASA astronaut.

"I own a LAN-party-optimized house," says Kenton Varda, a Googler whose house I've written about a couple of times.

"I can do the Spock eyebrow," claims Julio Ojeda-Zapata, a tech writer for the *St. Paul Pioneer Press.*

"I shook Steve Jobs' hand," says Robert Scoble, startup liaison officer at Rackspace.

"Slashdot. I did that," says Rob (CmdrTaco) Malda, who now works at *The Washington Post.*

"I've been shot at while writing code in a 120-degree tent, I've made sensors out of Jell-O," says Matt McKeon, a Google software engineer.

"When I was 14 I wrote a single pass 6502 assembler in Atari BASIC (yes, really). In college, while my peers had modern 286 PCs for their assignments, I had a hand-me-down Heathkit 8086; I rewrote the BIOS so it would be PC compatible enough to run MS-DOS 3.0, Wordstar, Lotus 123, and Borland's Turbo C IDE. Everything since then is a corporate trade secret," recounts Richard Masoner, who works at Oracle/Sun and indicated to me afterward that maybe he should have been briefer.

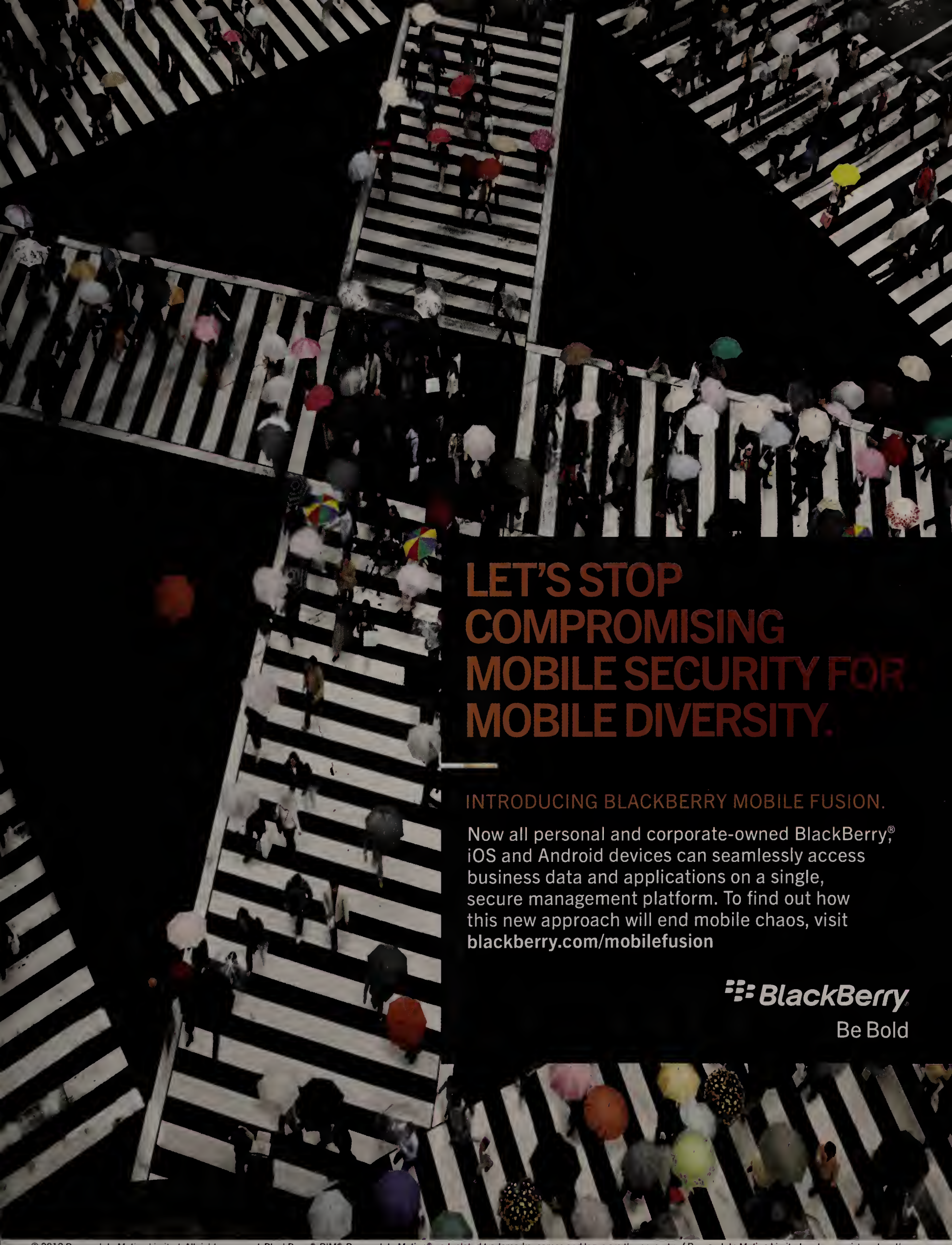
Here's one of the best-received — at least based on comments:

"Found a dead body when I was 12, saved the Enterprise a few times, Ran the Axis of Anarchy, broke up Penny and Leonard. Currently running the non-lethal weapons lab at Global Dynamics," recounts actor Wil Wheaton.

And, finally, there were quite a few Google+ users who settled on some variation of this theme offered by computer programmer Rob Colbert:

"I don't brag." ■

Mine didn't make the cut. If you'd like to nominate one — even your own — the address is buzz@nww.com.



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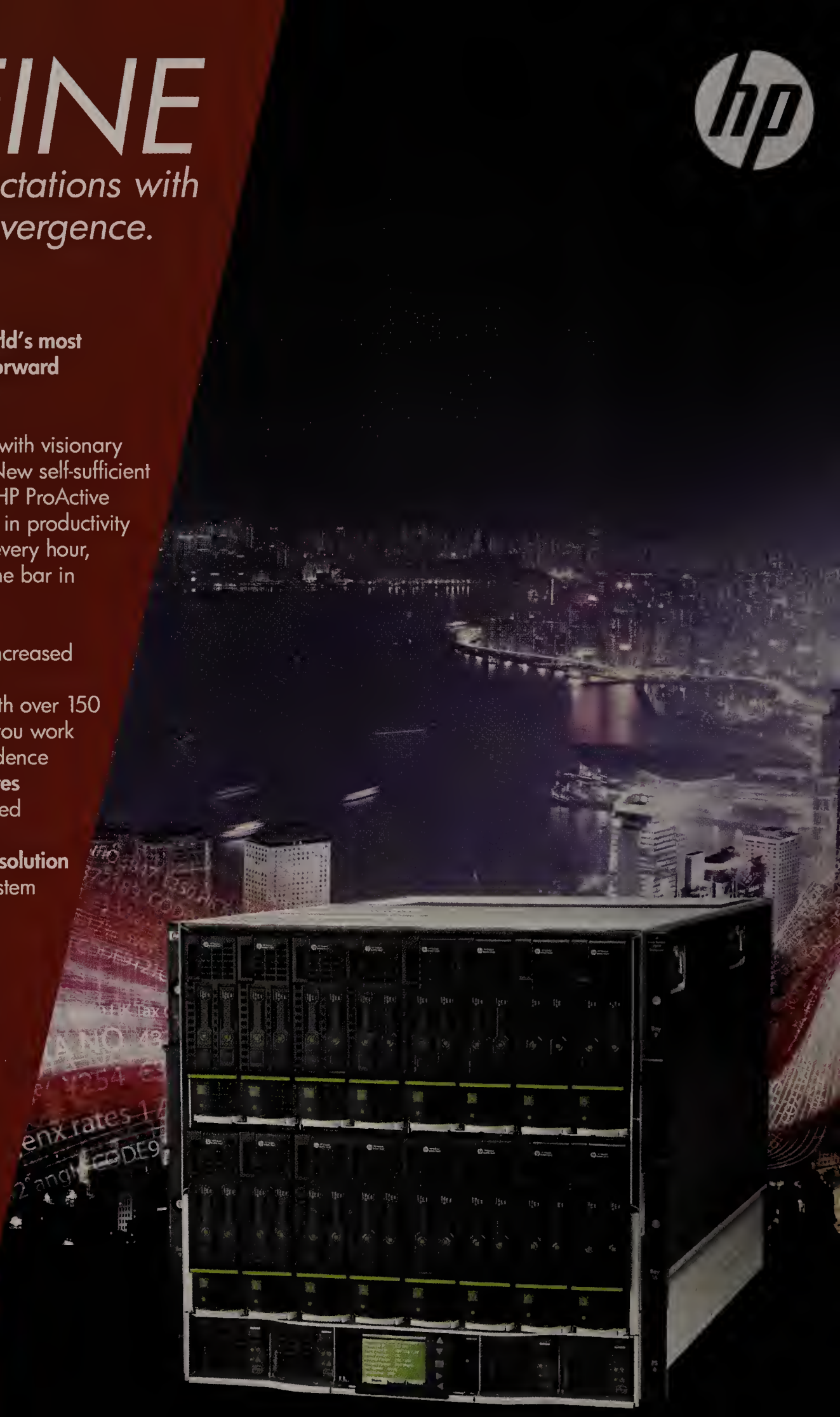

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